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COMPUTER WEEKLY

New hopes for US firms in Iranian market

by Keith Jones

WESTERN computer manufacturers are waiting in the wings for the cue from the new US government to resume trading in Iran. Those like Control Data and NCR which filed lawsuits for losses caused by the revolution are among the 300 US companies now looking for their claims to be resolved by the International Tribunal being set up as part of the deal that included the release of the hostages.

IBM still has a branch with 170 Iranian nationals servicing a customer base with mainly office products, but since the trade embargo imposed by the US government last year they have received no spare parts. IBM said that it had no information about

the US government's intentions regarding trade with Iran.

A spokesman for Honeywell Italia, which includes Iran in its territory, said that his company was ready to resume business with its Iranian distributor, Iairan, which had 700 people when the revolution started in 1979 and which still existed "on paper".

Iairan serviced 12 big Honeywell systems with key public sector customers like the Ministry of Finance, the army and the air force. The Honeywell spokesman said that Iairan had plenty of spare parts when Honeywell had to pull out more than a year ago but there had been no contact with Iairan for some time and the current level of service was unknown.

Honeywell has regarded Iran as a very good market and was trying

to set up a joint sales venture to address the private sector before the trouble started.

Univac was also doing well, having set up a joint venture with the Iranians in 1978 to sell the complete range of Univac equipment and to build the V77 minicomputer under licence. Univac's parent, Sperry Corp, is suing the Iranian government for \$15 million.

Control Data, which filed a \$28 million lawsuit last year against "Iran, Iranian firms and individuals", had established a joint venture to build its Plato computer-based training terminals and was setting up an institute for technician training.

CDC said that it had maintained contact with its former Iranian national employees even though

the 40 US citizens working there for CDC had to be evacuated early in 1979.

NCR is suing the Iranians for \$5 million, its 62% interest in its Iranian sales and service operation having been expropriated by the Iranian government. NCR kit there consists mainly of accounting machines and point of sale terminals, and former employees have now resorted to "cannibalisation" to keep equipment running, according to an NCR spokesman.

The UK's Scicon consultancy, which has a major presence in the Middle East, pulled out of Iran around June/July 1978, several months before the trouble started, purely because contracts there had been completed.

ICL has never had an operation in Iran.

More jobs this year, says forecast

JOB opportunities in computer for graduates in 1981 should be reasonably good, despite the gloom of last year when two big withdrew large numbers of offers.

That is the view of the Institution of Graduate Careers Advisory Services and the Standing Conference of Employers of Graduates who admit that their joint coming jobs forecast for 1980 was realistic, and now predict recruitment in 1981 will be "slightly up" on the 1980 figures.

Total graduate recruitment in 1980 was 20% down on 1979. Sectors such as software have most of whose recruitment among graduates, have a particularly chilling effect on the labour market, while the fact that only a few graduates cut back without making their own AGCAS.

Withdrawing job offers have been done in 1980 by ICL, CAP, was unlikely to cause firms were being more cautious in recruiting, added But, he added, these were unfortunate in that they made it look as if the whole pulpit industry was in trouble. In contrast, over 700 inquiries had been received over the 14 weeks asked by ICL.

It was, however, in manufacturing, where the recession much more severe areas. Some optimism was expressed by David Scott, SCOE, who says that the recession would turn out to be a year after launch.

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Pay freeze as ICL heads for £30m loss

A FIRST quarter loss of £20 million was disclosed by ICL's chairman Philip Chappell, at the company's annual meeting earlier this week. The company will also produce a loss for the second quarter of the financial year.

With the business expected to break even for the second half of the year, the year-end loss is predicted at about £30 to £35 million.

As a result of the figures, ICL has told hourly paid employees that the company cannot afford a general increase in pay during 1981.

Winsford, Chappell said that the cost of this would be borne as an extraordinary item in the accounts for 1981. A figure of £10 million was suggested as a likely cost (Chappell said he would not disagree with this figure).

He said the company would continue with the policy of going for medium and small computers. No restrictive answer was given to questions relating to the 1972 and bigger end of the range.

Chappell added that he believed the Japanese would have an impact in the UK market, place and abroad, and that ICL would not compete in the supercomputer business, which he defined as 20-30 MIPS.

The chairman indicated that there were adequate facilities with ICL's existing banks to finance the company and if needed these would be taken up.

Japanese impact

To the year 1980 the company disposed of 14% of its property in the UK. Further premises disposal are being considered for 1981.

When Chappell was questioned about the possibility of further major closures, he said that there were no current plans but that matters relating to production were under continuous review.

He expects expenditure on R&D to be maintained. He further announced that 750 orders have been received for the ME29 with a possible turnover value of £75-£120 million.

He indicated that there were no plans to ask the government for financial support, and that ICL maintained very close relations with the Department of Industry.

The DoI is fully aware of the short term problems facing ICL and ICL's plans to surmount the problems, said Chappell.

ICL LTD

A High Court Writ has been served on IPC Electrical Electronic Press Limited, publishers of Computer Weekly, by the Solicitor in ICL Limited and International Computers Limited. The writ claims damages for libel contained in the article concerning ICL published on the front page of the January 29 issue of Computer Weekly.

Redundancies at Altergo

THREE of the marketing staff at systems house Altergo were told last Friday that they were redundant. They included Calvin King (see Software File) who was to launch Altergo's latest TP aid, CPG...

The language.

Altergo managing director Dave Brownlee was unavailable for comment, but Tim Bourne, marketing manager, explained that the company was trying to cut down on overheads after a difficult financial year. "There's no way that we want to cut down on development, so we looked for a way of reducing expenses which wouldn't have a long-term effect."

One source suggested that Insac, which bought Altergo's marketing arm in the US, and still sells the TP monitor Shadow II there, had not fully paid for the purchase, but Insac managing director Peter Dine said that the deal had been long "signed, sealed and happily put away" and any problems Altergo had were not to do with the Insac deal.

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BRIEFING... BRIEFING... BRIEFING... BRIEFING

Compec for Manchester

COMPUTER WEEKLY is to launch a major new computing exhibition in Manchester this summer. Compec North, as the show will be known, will be held at the Lancaster Hall of the Belle Vue complex, Manchester, from June 23-25, 1981.

The show follows an analysis of visitors to Compec UK in November 1981 which showed that almost 80% of visitors came from the South East. Belle Vue is Greater Manchester's major exhibition site, just 2 1/2 miles from the city centre.

Great expectations

"ALTHOUGH we're small now, we're going to be big," said Ritchie MacLachlan of Filenab, announcing last week that the firm's 1980 turnover of £250,000 was likely to double this year as Filenab develops its report potential.

Viewdata plan

A MAJOR joint initiative for viewdata in the UK, involving the Department of Industry, Local Government and British Telecom, is to be announced later this month by Industry Secretary Sir Keith Joseph.

Same-day clearing

BASED on triple Barroughs 26700 mainframe, New York's Clearing House Interbank Payments System, Chaps, is moving over to same-day clearing on October 1. At the moment dol-

Herbert sale

A CHESHIRE-BASED consultancy has bought the computer division of the Alfred Herbert machine tool empire, which was finally liquidated last year. The consultancy, Organisation De-

NEWS IN BRIEF

Euro mergers needed - MP

EURO MP and deputy chairman of Ferranti, Basil de Ferranti, last week urged European computer companies to stop looking for public money and get behind the drive to create European institutions big enough to challenge the Americans and the Japanese.

De Ferranti, speaking at the British Computer Society in London, said that the principal reason the Americans had produced such big companies was the size of the local market they had to operate in. Europeans should speed up the integration of defence and PTT integration to create the same kinds of market for the European companies.

Bigger, cheaper

IBM in the US has added seven models to its family of 3274 terminal controllers. They use 32K-bit memory chips instead of the 16K-bit devices in the four older 3274 machines and come with memory capacities of either 64K-bytes or 128K-bytes. With 128K-bytes they still cost less than an older 64K-bit 3274 with a 64K memory upgrade.

Tandem expands

TANDEM, builder of the "Pai-saf" NonStop minicomputer range, is expanding its manufacturing capacity in the US by 80%. It is to spend nearly \$14 million on a new factory at Reston, Virginia, that will employ 300 people by 1983. Another 75 will work at a plant being leased at Santa Clara, California from printer firm Data-products.

Fujitsu US move

FUJITSU is the latest Japanese electronics company to announce that it will market personal computers in the US. It will introduce its personal computer terminal based on a word processing technique in the Spring.

Double CTL order

FAST-GROWING electrical wholesaler, the British Distributing Company, has ordered two CTL 8046 systems from Computer Technology Applications which include real time integrated sales order processing, stock control and online customer invoicing at the warehouse counter. There will be a total of 36 terminals at CDC's three warehouses.

Pascal meeting

THE first meeting of the UK UCSD Pascal users group, USUS-UK, is to take place on January 30 and 31 at the Dragonair Hotel in Bristol. Aims of the group include the compilation of a software library. Each meeting will provide the copying facilities.

Dealing with fires

FIRE brigades represent a well-defined market for Clifton, a computer-aided fire mobilisation system from Ferranti Computer Systems. Based on a Ferranti Argus 700 minicomputer, Clifton comes with four VDU's and software that enables a database of available appliances and personnel to be created and assessed.

NCC project to aid small micro users

A MAJOR project has been launched by the National Computing Centre, with funding of £250,000 from the Department of Industry, to provide advice and help to small businesses wishing to start using microcomputers. It will include training and demonstration centres in London and elsewhere, and a national federation of existing microcomputer centres to promote co-operation and standards.

A new division of the NCC is being set up, with a separate identity, to cater specifically for users and overcome, in the words of NCC director David Fairbairn, the "apprehensions of small businesses" over the problems of acquiring computers. In return for a £25 yearly subscription firms will receive newsletters, discounts on publications, and priority at workshops.

Advice at NCC's premises will be available at a charge expected to be in the order of £25 an hour. Information on software and applications, and the results of case studies will be on hand.

On the thorny question of whose equipment would be on show at the microsystems centres, group director Derek Scriven said the selection would be "small but representative", and that without wishing to endorse certain makes the NCC would want to make sure that the kit it demonstrated was "good and sound".

The existing centres, such as those at universities and the World Trade Centre, which joined the national federation would have to subscribe to a code of practice, Scriven said.

The London Microsystems Centre is planned to open on April 2, under the direction of Eric Bird.



AN ICL 1901T, a Digital Equipment 310, an NCR 8200 and 8130 and two Singer System 10s will be the lots going under the hammer on March 11.

Michael Hart and Michael Green, who is the one with the hammer, are founder members of Computer Auctioneers Ltd. They will be holding their first auction at a 150-seat auction room in North Corner, Pound Hill, Crawley, Sussex.

Green feels that "the true value of used kit will emerge" in the se-

lery room. That true value could well be very low, as illustrated at a Sotheby's auction in New York last November. Although this only piece of kit to reach the reserve price, an IBM 4331 changed hands for a mere \$14,000.

Green and Hart are amazed at the interest their venture has generated. Second-hand kit is in the pipeline from all major manufacturers. There is even the likelihood of an ICL ME29 being open to bids just a year after launch.

EEC to spend £31 1/2m on Ada development

THE European Communities Commission is to spend more than a third of its annual DP budget on two development projects on Ada, the new high-level real time language specified by the US Department of Defence and developed by CII-Honeywell Bull in Europe.

The two projects are worth £3.5 million and will be managed by two linked nationality consortia. One is for a "root" compiler portable between mini, micro and mainframe machines. It accounts for £2.01 million of the budget and will be carried out by a French and German team from CII-HB, Siemens and Aleya, whose president Jean Ichbiah headed the Ada design team at CII-HB.

The second project is to develop a portable support system for Ada programming, including a back-end compiler for minis and micros based on the French/German root compiler.

It will be carried out by a Danish/Italian team consisting of Danish DataMatrics Centre, Olivetti, and Rovving. The team will be using the British systems house Systems Designers Ltd (which is part of Britain's "38" Ada consortium) as a sub-contractor.

By investing over £3.5 million in the implementation of Ada the European Communities Commission is taking an important step towards standardisation and portability.

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Banks aid small high tech businesses

THE PAST few weeks have seen a plethora of new small business and venture capital loan organisations, mostly with computer and high technology companies in mind, springing up.

Most recently, the Wilson Committee on Finance for Industry was told that there is a serious shortage of equity finance for small companies in Scotland.

The Royal Bank of Scotland, partnered by Scottish Western Trust and James Finlay and Co, has set up a fund with initial capital of £3 million. The object is to provide equity finance of between £50,000 and £500,000 for small and developing companies, particularly in the computer and high technology fields.

It will also assist individual shareholders to dispose of their shares in private and unlisted companies.

The European Investment Bank, the BEC's banking institution, is to increase its loan substantially to small- and medium-sized businesses in the UK's assisted regions.

After two years of attempting to operate the fund through the Department of Industry, the EIB is to make its services available through the Industrial and Commercial Finance Corp (ICFC).

In the years with the Department of Industry, the EIB made 128 loans totalling just £5 million. This compares with 521 loans made to entrepreneurs in the last Republic over the same period.

Finally, the government-backed loan guarantee scheme looks as if it will feature in the Budget. Under this scheme, the government will guarantee loans made by banks and others to small businesses.



The Bank of England - a major participant in the new automated payments system between banks.

Chaps to go live in 1983

THE Clearing House Automated Payments System, Chaps, which was cancelled in its original form a year ago, has been given the go-ahead in its less expensive decentralised form.

As reported in Computer Weekly last year, the clearing banks will be linked to each other via British Telecom's Packet Switched Service and will take advantage of the closed loop facilities offered by PBS for security.

Chaps is expected to go live in stages in 1983 and will replace a large part of the existing manual Town Clearing procedure for handling same day clearing of large transactions between the clearing banks and the 200 or so other banking concerns in the City of London, many of them international, that maintain accounts with the clearing banks. The Bank of England and National Giro will be major participants with the clearing banks.

One of the biggest disadvantages of the original centralised Chaps system was that every bank, regardless of size, would have had to support in-house terminal equipment and a leased line to the ICL 2960 host. Many of the smaller banks objected strongly to the costs they would have had to bear.

With the new Chaps system they can carry on using paper if they want to.

● Turn to page 6

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Magazine's cool reaction to '1,000 free pages on Prestel' offer

by Donald Kennet

BRITISH TELECOM has offered 1,000 free pages on Prestel to the magazine Practical Computing for its publication of telecomputing, but the reaction from the magazine has been cool. "We would have to do it all in one go," said editor Peter Laurie. "But right now there would be no financial benefit for us, only the hassle of keying in the programs."

He has asked the Department of Industry to fund the inputting function. The DoI is considering it.

The Council for Educational

Computer Sciences back in business with US govt

COMPUTER SCIENCES IN THE US has been allowed to resume bidding for new government contracts despite the legal action against several of its employees for allegedly defrauding the government when selling time sharing services on CSC's Infonet network.

The US government's ruling has been warmly welcomed by CSC which derived 63% of its total business from government contracts in its fiscal year ended March 28, 1980.

The government is charging the CSC employees with deliberately overpricing Infonet services and

time sharing is the one area of new business bidding that remains closed to the company. Infonet brought in more than \$44 million from government business in the last fiscal year, although this sum was still relatively modest compared with the remainder of CSC's government business. It amounted

Typewriter conversion unit

IBM GOLFBALL typewriters can now easily be converted into printers, using an attachment from Data Resources that fits inside the typewriter case with no substantial modification. A set of eight small solenoids act on the clutches inside the typewriter, providing a standard RS 232 interface to a small computer or word processor.

The price of the conversion unit, made by Escon of Santa Barbara, starts at \$420, depending on what interface and options are required. The character set is determined by a replaceable PROM.

All the electronics are in a separate box; the only modification required to the typewriter case is the making of a hole for the cable.

Management is vital factor in micros for industry

by Rory Johnston

MANAGEMENT commitment to the importance of new technology is easily the most important factor in introducing microelectronics into industry. That is the finding of the study, just completed, on the use of microcomputers in manufacturing carried out by the Computing Services Association for the Department of Industry.

Visits were made to 120 firms, and the study looked at applications for micros in process control, in products, and in information systems. Project leader Gerald Jones, of John Bell Computer Services, said that average success rates jumped from 40% to 80% when management were clearly committed to the work, and this was the main message of his report to firms thinking of taking up the new technology.

A draft of the report is now being considered by the DoI. The intention is that the final version will be given to all firms that apply for MAP funding from now on, to provide guidelines for their work. Consultants taking part in the MAPCON scheme will also be provided with the report.

Some of the firms studied for the report were small, some large, some experienced, some relative neophytes, but none was a complete newcomer to microelectronics.

The conclusion of the micro project was announced at the CSA quarterly lunch by director-general Doug Eyles, who added that the related Text Processing project, in carrying on its work, was pressing hard to the DoI and

the EEC on the need for test-interchange standards. The main concern of the CSA at the moment however was the Telecommunications Bill, now in committee stage in Parliament.

The Bill in its present form was not nearly as liberalising as it should be or as the government had intended, Eyles said. It was far too restricting in giving British Telecom a monopoly of any value-added services that it was even "contemplating" going into. Eyles complained, and type approval of new equipment would still be too complicated, he said. Instead there should be licensing of installation engineers, with a "company fuse" on the wires to protect the network from equipment failure.

Commented CSA president Alan Thomas, "The Bill gives IT a free range to be inhibiting" in new developments. He complained that British Telecom was all too ready to give speedy approval to its own new developments such as Prestel when dawdling over others' proposals.

Thomas is meeting Information Technology Minister Kenneth Baker this week and will raise this issue. Doug Eyles also spoke of the voluntary training council planned for the computer industry in place of a statutory body and which has now been approved by the Manpower Services Commission although it does not yet exist officially. The council is a co-operative venture with the BCS, the NCC and the IDPM, and two academics need to be found to join it.

Chinese 'shopping trip'

A DELEGATION from Chinese universities is to visit the UK Computing Services Association next week as part of a "shopping trip" to obtain equipment and advice as part of \$393 million scheme to develop scientific and technical education in China. The money is a promised loan from the World Bank which will be divided between chemistry, engineering, physics with electronics, and computers.

Specific facilities for which

equipment is to be purchased at test centres, key laboratories, and computer centres. The Chinese on their visit will also be seeking UK manufacturers and staff at universities and polytechnics.

CSA director-general Doug Eyles also announced that a trip to Japan is being organised in conjunction with the London Chamber of Commerce. Japanese hardware manufacturers continue to be very interested in UK software.

Chaps to go live in 1983

From front page

wish, the difference being that a bank will deliver the paper to its own clearing bank which in turn will transmit the transaction information via PSS to the clearing bank of the payee bank, a method known as credit clearing. Town Clearing uses debit clearing where the paying bank delivers the paper to the bank being paid, which in turn hands it to its clearing bank for clearance with the clearing bank of the paying bank.

The new Chaps will also enable a bank to phone the transaction to its clearing bank or access its clearing bank's system using a simple telephone link or its own computer. Access will also be possible via the Swift interbank funds transfer network or possibly via PSS itself.

As expected the gateway hardware being installed by the clearing banks will be Non Stop multiprocessor kit from Tandem, and the basic software for message control and transaction auditing will be developed by Logica under a contract worth at least £200,000. The auditing software will maintain records of billions of pounds worth of transactions every day. Tandem kit was chosen not only for its reliability but also for the systems software supporting the 24x7 operation on PSS. Tandem kit will be installed at the Bank of England and five or six clearing banks, with some of the smaller clearing banks sharing machines.

ler clearing banks sharing machines.

The Chaps clearing committee rather than Logica itself will retain management control over the whole project.

Chaps users can "shop around" for a clearing bank that offers the best service and it is envisaged that in future users will include a lot of big commercial organisations as well as banks.

A major advantage offered by Chaps to the banking industry is that it will enable transactions of any size to be handled on a same day basis where rapid clearance is needed. With Town Clearing the minimum transaction size is £10,000, because of the costs involved.

Another benefit will be the availability of identical same day clearing facilities to banks and other organisations beyond the confines of the City of London.

The total cost of developing the parts of the Chaps system used by all participants will be about £1 million. In addition, about £1 million is expected to be spent by the major participants on Tandem hardware.

The major participants in Chaps include the "big four" English clearing banks, Williams and Glyn, the Trustee Savings Bank, the Clydesdale Bank, the Royal Bank of Scotland, and the Bank of England and the City.

MICRO NEWS

Now the micro takes over behind the bar in your local pub

AS the Seventies saw the creation of microcomputers, so the Eighties is predicted to be the decade for applying them. The ball has already started rolling with the development of a microcomputer-based bar management system, called Micro-BAR.

Micro-BAR was designed in the UK by Stephen Weich, managing director of Selmicro, based in London.

A company called Micro-BAR UK has been formed specifically to market the system, and to take care of all its associated future developments and extensions.

Weich's aim was to bring the microcomputer to the small businessman in a dedicated manner, so that it would have the least psychological effect and not too many disruptions to the running of the business.

He has succeeded — the system can be operated with the push of a button to obtain a real time status of stock for up to 128 different lines.

Stock data can be accessed by management; the system does not require a bar tender or even a computer person to operate it. Stock control is carried out automatically by an electronic transducer connected to each optic, which passes

information to the 6802-based microcomputer every time a drink is dispensed.

The problem of attaining an electrical signal from an optic whenever a drink is dispensed has been around for some time. Weich claims to be the first to have solved it. His method requires a special encapsulated optic including the standard optic and the electronic monitoring device, which is being made in the UK by Lucas Industries.

Racal Microelectronics Systems, of which Weich is a director, is assembling the system. It consists of two brief-case sized units, one of which is housed in a brief case and called ADAM (auxiliary data access monitor).

Adam contains a keyboard and a thermal printer so that individual lines can be accessed and a printout obtained.

Custom designs

The choice of memory is left to the user. Micro-BAR operates using two sets of RAM memory (up to 64K capacity); a cumulative memory and a resettable memory so that information can be obtained in an instant after certain periods of time.

The time interval is unlimited and Weich is prepared to consider custom design using more than one resettable memory. The system is battery backed, and can keep 128 lines going during a power failure for up to six hours.

Weich's ingenious method of obtaining an electrical signal from a dispenser to monitor the output flow can be applied to other products sold in a public house, hotel or catering house.

Weich is working on monitoring pub games; cigarette vending machines, food vendors and fruit machines. He is also having talks with butchers, newsagents and betting shops.

The cost of the basic Micro-BAR system with up to 25 dispensing points is £2,500. Extra dispensing points can be obtained for £100 apiece for up to 32 in total and £85 apiece for over 96.

Winchester disc based system for under £5,000

A WINCHESTER disc based microcomputer system selling for under £5,000 has been developed by South Wales OBM systems company, ComCent Microcomputers. The system runs off a Zilog eight-bit microprocessor, the Z80A, and uses Western Digital's CP/M single-user and MP/M multi-user operating systems.

ComCent was set up by brothers Peter and David Norman, who also run a computer shop called Computer Centre, in Swansea. Now, at the £1 million a year turnover level, the company has organised a systems assembly plant in Swansea occupying 4,000 square feet.

The plant became operational last October and is now producing about five systems a month. The company hopes to double its production by next month.

The 20-megabyte Winchester disc systems are manufactured in the UK by Data Recording Equipment and ComCent has built the controllers. True IBM Winchester technology was used in the design of the drive which have a transfer rate of 6.3 megabits per second and an access time of 35 milliseconds.

Twin eight-inch floppy disc drives are used as back-up to the Winchester discs and can provide up to 2-megabytes of storage. A standard 16K of RAM is supplied and this is expandable up to 256K bytes. The system runs the \$100 bus.

Networking facilities are provided with the MP/M multi-user operating system. ComCent is selling eight-user systems for under £5,000 to the education market, but it is also aiming at the OBM and scientific markets.

Peter Norman told Computer Weekly that the company will be looking at Microscope's Unix-like multi-user operating system as a cheaper way of providing the networking facilities.

Z80B peripherals

FOUR peripheral devices for the 6MHz Z80 eight-bit microprocessor, the Z80B, have been announced by Zilog. A parallel I/O controller, a counter/timer, a serial I/O controller and a dual synchronous receiver/transmitter now exist in 6MHz versions, thus enhancing the performance of Z80B-based systems.

by Eileen Stainer



Stephen Welch of Selmicro with the Micro-BAR bar management system.

Acorn Computers buys Orbis

DEVELOPER of the Econet networking system, Acorn Computers, has bought out Orbis, owner of the marketing rights to the Cambridge Ring. Orbis will carry on trading as before, but Acorn will effectively control both major small systems networking techniques.

This represents, according to Weich, one to two weeks' turnover of a typical company, or an investment of 2 to 4% of annual turnover. The system can also be leased.

If Adam is needed for a particular application, this is an extra £525. An RS232C interface is supplied with it for access to telephone lines.

Expansion

Adam has room for much expansion: there are four blank keys on the keyboard and room for extra printed circuit boards.

Micro-BAR is already installed in several locations on a trial basis. The first customer, Courage, installed the system last March and

tested it extensively at its laboratories. The specifications required were for less than a 1% error in 5,000 dispensations. Micro-BAR achieved zero per cent error in 15,000 dispensations.

Other interested customers are Allied Breweries, Thwaites Brewery and the Grand Metropolitan Group. Systems are soon to be installed on a trial basis at Bass.

Many interested customers are asking for specific expansion facilities such as programming on-site, inventory control and checking stock levels.

Weich expects to be producing expansion boards for the system at a rate of three or four a year.

At the moment Micro-BAR is being released only in the UK.

Adam contains a keyboard and a thermal printer so that individual lines can be accessed and a printout obtained.

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Expansion

Adam has room for much expansion: there are four blank keys on the keyboard and room for extra printed circuit boards.

Micro-BAR is already installed in several locations on a trial basis. The first customer, Courage, installed the system last March and

tested it extensively at its laboratories. The specifications required were for less than a 1% error in 5,000 dispensations. Micro-BAR achieved zero per cent error in 15,000 dispensations.

Other interested customers are Allied Breweries, Thwaites Brewery and the Grand Metropolitan Group. Systems are soon to be installed on a trial basis at Bass.

Many interested customers are asking for specific expansion facilities such as programming on-site, inventory control and checking stock levels.

Weich expects to be producing expansion boards for the system at a rate of three or four a year.

At the moment Micro-BAR is being released only in the UK.

Custom designs

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The time interval is unlimited and Weich is prepared to consider custom design using more than one resettable memory. The system is battery backed, and can keep 128 lines going during a power failure for up to six hours.

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Growth area squeezed by the banking system

All those difficulties which are faced, day by day, by people in our industry trying to start up on their own, were brought into the open at the Sunday Times conference.

Banking on Britain. From the highest level of the banking and government world comes the news that from the tax you will have to pay, to the amount of money you can

borrow, all is about to change.

Computer Weekly associate editor KEVIN CAHILL was at the conference and examines here some of the views presented.



KENNETH BAKER, the Information Technology Minister, is now a new spirit abroad. More ready to lend in the City and to the clearest.

If you seriously want to get into business as a software house or a micro manufacturer, here are some of the difficulties you may face:

If your company has turnover of £50,000 and you pay yourself a salary of £10,000, here is what could happen: Salary £10,000, PAYE £3,000, NIS £1,000 (you + company). Net to you: £6,000 approx.

Your company makes a profit of £20,000, after your salary and expenses. You have to meet corporation tax of £10,200, tax on dividends of £3,000.

Out of what is left you are meant to provide the finance for your company, the government having taken out 34% of the profits, but 34% of the gross revenue.

No risk capital; immediate repayments of interest and capital; a second mortgage on your property; loans on short terms of two to five years.

A merchant bank is fundamentally not interested in start-up situations or companies with less than £500,000 turnover.

THE UK is moving into the depths of the worst recession since the Thirties. Debt queues have almost reached 2.5 million, and the CBI forecasts this week that a further 500,000 jobs will be lost in the coming months.

However, the computer industry, with one or two notable exceptions, continues to report record profits, both here and in the US. The number of vacancies in it continues to outstrip the supply of people to fill them.

Yet here in the UK, there are only six companies wholly engaged in computing that are listed on the Stock Exchange.

This tiny presence can be put down to any number of causes, but there were a series of points made at the Sunday Times Banking on Britain conference which appear particularly relevant to the UK financed native computer industry.

The six companies listed on the Stock Exchange's various markets also appear on the list of 50 computer companies drawn up by stockbrokers Green and Co. Of the other 44, most are part, sometimes a small part, of very large parent companies. Center-file, for instance, is the largest bureau in the industry, employing about 750 people. But the parent, NatWest Bank, employs 70,000 people and Center-file's 1980 turnover was £13 million compared to NatWest's total assets of £28 billion.

Part of the reason for this situation, particularly in the growth of computers, was traced at the conference to a series of shortcomings in the banking, tax and social systems. The conference was dominated by the alleged failures in the banking system.

The conference was called as the result of two articles written for the Sunday Times by Lord Harold Lever, the millionaire former

Labour Cabinet Minister, and George Edwards, head of postal services at the Post Office.

Put in its simplest form, the first of the Lever-Edwards articles showed that, for every pound invested in industry in Britain, Japan invests three pounds in Japanese industry. But there is more to it than that. Taking all the funds available for investment in the UK, fully one-third of those funds, about £40,000 billion in all, is lodged with the building societies as short-term deposits, lent out for periods of 20 to 25 years.

What this has done for Britain, according to Lever and Edwards, is to leave us with an industrial base where the average age of equipment is 35 years, twice as old as the average age of equipment in Germany, Japan and the US.

The UK has good housing, probably the best in the world, and certainly better than in Japan,

where more than 85% of homes have no directly connected sewerage. But the price of this good housing stock is being felt most sharply by those with good homes and no jobs.

If ICL had been able to borrow on the same basis as the average homeowner, i.e. two and a half times gross income, we would have a computer giant with over £1.7 billion in funds, lent on a relaxed 20 to 25 year repayment term. Instead we have a computer pygmy struggling to survive on total loans (banks and shareholders) of a puny £226 million.

Lever and Edwards classed all non-investment expenditure as consumption. On that basis they made the following five points:

1. A much greater proportion of national product must be reinvested.

2. British industry has to raise most of its investment capital from its own (highly taxed) profits. In Japan major finance comes from outside the company, and German entrepreneurs can raise three times as much money from the banks as the British.

3. Britain's banks lend comparatively little to industry.

4. Japan's industrialists have really long-term loans of 15 to 20 years. In Britain the formal term averages 2½ years.

5. In Japan the debt equity ratio is 85. In Britain it is 22. (The debt equity ratio is the amount of money per £100 that a company must find outside its own resources.)

In the second article Lever and Edwards argued for a series of changes in the proportion of money being channelled from the three great fund-raising agencies — the insurance and pension funds, the banks, and the building societies — to industry.

The reaction

Following the publication of the articles, there was an unprecedented reaction from the public.

The banks, in the form of NatWest chairman Robin Leigh-Pemberton, leapt into print. He attacked the Lever-Edwards statistics on the ground that they were ten years out of date, rather than dealing with the principles raised, and with glorious injustices alleged that no industrialist who was a customer of the National Westminster Bank had ever complained to him of being refused a loan, which, in the customer's view, was affordable.

The following Sunday the Sunday Times carried a series of letters from NatWest customers, flatly contradicting Leigh-Pemberton. So vociferous was the criticism that the Sunday Times fixed up the conference to allow the protagonists to debate their differences.

Settled out of court

by Keith Jones

A PRIVATE anti-trust suit against IBM which has been as protracted as the government's marathon case has been settled out of court, with IBM paying Greyhound Computer Co. £17.7 million.

The leasing subsidiary of the famous bus company first filed its suit in October 1979, demanding \$100 million damages, a figure that could have topped the list of the highest damages in the business world.

A joint statement from IBM and Greyhound said that the case, due to start on January 26, would have lasted several months and involved substantial expenses on both sides. The \$17.7 million paid to Greyhound will cover part of the expenses it has incurred to date.

In 1969 Greyhound charged IBM with trying to monopolize the leasing business with tactics like manipulating its own purchases and lease prices.

Greyhound has now withdrawn its charges "with prejudice" meaning that it can never reopen the case.

With Greyhound off its back, IBM has now only to deal with pending appeals from three other private anti-trust litigants: Memorex, Forre-Delmon and another leasing firm, Transamerica.

Meanwhile, the US government's anti-trust action against IBM is expected to reach the district court early this year.

US time sharing bureau Boeing has bided off its ICL bureau and software marketing arm in the UK, and is now concentrating on winning more customers for its US-based scientific and engineering service through a new subsidiary, Boeing Computer Services (Europe).

Peter Hooper, former managing director of the UK branch, bought out the part of the business which was based on the Capital Cities ICL bureau acquired by Boeing five years ago, and also the specialised airline software, and the Prime interactive business system.

"There hasn't been any bad feeling about this deal," stressed Boeing's new managing director, George McLeod. "This is Hooper's opportunity to do his own thing with the part of the business he knows best, while we can concentrate on what we feel comfortable with."

The new Boeing subsidiary intends to increase its share of the scientific time sharing market by taking advantage of the lower cost of such computing in the US.

"We can sell at US prices," said McLeod. "Engineering computing there costs about half what people pay here and as they're eight hours away in time, it means we get night shift rates as well."

"Times are hard and it means that companies aren't growing as fast, so they are looking around to do the same amount of computing but more efficiently — they have to contain costs. They could have done it before if they'd had us; it's just that they'd never had us."

Boeing, subsidiary of the aircraft manufacturers, employs over 5,000 worldwide, and runs one Cray machine, four IBM 3031s, eight Cyber and one of the world's largest CDC installations. The Mainstream time sharing service concentrates on financial planning and engineering/scientific computing, where the information content of data is high enough to demand machine power on a grand scale.

At the moment Boeing has UK centres in Watford, London, a new centre in Coventry, and it is likely that there will be premises in Europe to cater for new users there.

... as ICL bureau, software arm split

"I WOULD not have said 1981 was the best year to start a business," Hooper commented on the split, "but an international crisis is a good time to prepare for the future and I expect an upturn before the end of the year."

The business which had developed out of Boeing's Watford bureau, now called Hooper Systems & Technology, HOST, had looked like taking the US patent in a direction: it did not want to go. Boeing had decided to concentrate on its mainframe-based time sharing service, and the alternative to the split was to close down a business which had grown to 80 employees and a £1.7 million turnover.

In addition, Boeing had started to include the division's products and services in package deals with aircraft sales and wanted to stop selling to rival aircraft manufacturers, which irked Hooper and his team.

But this wish to avoid siding rivals did not prevent Boeing from helping the new company on to its feet: of the £500,000 involved in setting it up, about two-thirds has come from Boeing — to fund the purchase of three ICL MB29s and to provide working capital.

It is to be repaid out of profits. Hooper, as chairman and managing director, will hold 70% of the equity, while two co-directors, Stan Packham and Steve Unsworth, hold the remainder.

Plans for this year include converting the ICL 1904-based batch processing services to run on MB29s, adding online capability and selling the application software used by the bureau, including payroll, invoicing and other accounting packages.

Comal demo at Bulmershe

OVERWHELMED by the response to his recent article on Comal (Software-File, January 22) Roy Atherton of Bulmershe College of Higher Education has hastily organised a conference.

Three computer educationalists will discuss and demonstrate Comal, Logo, and other computer-aided learning techniques at Bulmershe in Reading on February 27. They are Max Bramer of the Open University and Peter Ross of Edinburgh University, as well as Atherton himself.

"The growing interest in structured programming in schools suggests that the time may be ripe for a breakthrough in software almost as far-reaching as the hardware developments of 1977 and 1978," commented Atherton.

"The use of well-structured languages which are simpler to use than Basic is a fundamental step forward for computer studies."

Details of the Beyond Basic conference are available from the College at Bulmershe Court, Woodlands Ave, Ebury, Reading RG6 1HY.

SOFTWARE FILE

Boeing homes in on scientific market...

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HOBBY ROBOTICS

A monthly newsletter in association with Hobby Robotics of America for the weekend and beginner.

Subscription £18.50 per annum

The Editor, 124 Forest Road, Tunbridge Wells, Kent

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Know-how added to German logic

"LIKE nothing you've ever heard before" say the adverts for CPG, a teleprocessing language which is promising its US users that it turns batch programmers into TP programmers overnight.

CPG (sold in the US as CPG) The language is being pushed hard in the US by Insac, and is about to be launched over here by Altergo.

Like most Altergo products it is aimed at the IBM market, with the stress in productivity and performance.

"Effectively, it saves you one programmer a year," said Calvin King, who is marketing CPG in the UK for Altergo. "There are also benefits in increased programmer productivity, high system performance and a reduction in training."

Altergo came across CPG three or four years ago when selling its TP monitor Shadow II to a German customer, Renker Daxen KG, paper specialist subsidiary of Rührig. The firm had written the language for its own use after discovering that its IBM 370/125 "died" when programmers tried to write TP applications in Cobol.

Unable to find people to write in Assembler, Renker created CPG to generate programs in Assembler from high-level instructions.

"It is knowledge of what goes on in the machine combined with straightforward German logic," commented King.

Altergo snapped up the product and has been grooming it for commercial consumption in the last two years. King himself was involved in writing the Shadow/CPG interface, which enables users to keep the same program code should they wish to switch from CPG to Shadow.

He moved from the back room to the sharp end of marketing partly because of his faith in the product, and identifies several targets for CPG. "It's basically aimed at people who are short of TP programming resources," he explained.

"One significant market we've identified is System 3 to 4300 conversion, but it's not the only one and eventually we hope to crack the L-600 market."

"Cobol programmers don't like the threat of being 'deskilled'; they tend to say 'the kind of things we need to do can only be done in Cobol', but in fact once we've overcome that attitude they find CPG does it more efficiently."

The price of CPG is in the region of £10,000, and includes manuals, support, and one year's maintenance.

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The price of CPG is in the region of £10,000, and includes manuals, support, and one year's maintenance.

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"It is knowledge of what goes on in the machine combined with straightforward German logic," commented King.

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PROGRAMMERS' PAGE

Job market 'as dead as a Dodo'

ANYONE can see that the job market is in the doldrums at the moment, even in computing. The classified ads are a fraction of what they were, redundancies are announced almost daily, and letters like J. M. Perry's on this page are getting more and more common.

But what of the established consultancy and contract houses? How sharp is the pinch for them? I approached Harrison's Computer Services, which has four branches in London, East Angles, Devon, and Ireland. A fifth is planned but the location has yet to be decided.

Laid off

Richard Mead, one of the directors, and managing director of the Eastern branch, confirmed everybody's guess. "The market is as dead as a dodo. In my job I have a lot of contact with DP departments from a whole range of companies and the difference from just a year ago is staggering. Projects scheduled for the next few months have been indefinitely postponed, or cancelled outright. Staff are being laid off in some cases whole DP departments are closing down, and I know personally of four organisations in the last month where the computer managers were asking about jobs with us."

I remarked that he would have no problems in finding staff - at least he'd be well supplied with DP managers.

"Absolutely. In fact we always get a very large response to our advertisements from all over the country, the North and Midlands included."

Expanded

He hurried on to explain some of the background to Harrison's. "We're in a fairly fortunate position. Thanks to some quite large projects we acquired at the end of last year we have actually expanded in the last few months -



Order Line, the telephone enquiry system set up by Freemans Mail Order, allows agents to check the availability of catalogue items by telephoning an operator seated at a VDU. Orders can be amended or reserved on the spot.

How do I break into the 'closed shop' of computing?

I WONDER if you can help me. I am a mathematics teacher, with a degree in mathematics, and am currently teaching in a secondary school.

For some time I have been considering leaving teaching and seeking employment in computing. I am particularly interested in training to be a systems analyst or analyst/programmer. However, when I read through the appointments section of your paper the majority of advertisements contain the magical phrase

Here are my five ideas . . .

- Pamela Rowe replies:
- I HAVE been asked this question before, and there isn't an easy answer. Only a couple of years ago any graduate, and particularly one with a maths degree, was fairly well sought after to train in programming. Recession has changed all that. Now there are experienced programmers going spare, or if a company is really committed to training, there are plenty of unemployed computer science graduates about, who have a three-year headstart in the basics and have almost certainly done some programming.
- So it is a depressing state, and J. M. Perry has taken on a difficult task. I can't offer a lot of encouragement, but there are five possible things to try:
1. Keep combing the ads and apply for any likely trainee vacancy, even if you are not qualified by experience. This will probably be the programming, as it is not usually possible, or even desirable, to go straight into analysis.
 2. Write to all the companies within reach that employ com-

by Pamela Rowe

Catalogue shopping by computer

ARE you up to the proverbial mauls with shopping? All that Christmas trudging about weighed down on one side by enough brussels and spuds to feed an army, and on the other by a 10-lb turkey representing your Christmas Day entertainment - verily the modern beast of burden is woman. And this was followed by the slings and arrows of outrageous January sales to save pounds off that sheer you've been putting off buying for months.

If now you feel you can never look another shopping trolley in the face, sit back, sip your coffee, and let your fingers do your walking for you. Not through the unrelieved sobriety of the Yellow Pages, but via the glossy colour pictures of a mail-order catalogue.

Order Line

While there is nothing new about catalogue shopping, Freemans Mail Order of London has smoothed out and speeded up the whole business by incorporating a telephone line and interactive computer into the system.

Called Order Line, the process starts in the conventional way with an agent taking details of a customer's order. The agent-person can then ring a relatively local number and speak directly to an operator seated at a VDU, who will check the availability of any of the 20,000 items on offer in the catalogue, and, hopefully, reserve the order.

If the particular item, colour or size is out of stock, a second choice can be made, or the whole order amended on the spot, avoiding the sometimes lengthy, or even abortive, to-and-fro of the postal service.

Nationwide

Bob Shemmings, a director of Freemans, told me that by August 10 Order Line would be nationwide, and employ 100 terminals operated from five computer centres.

The fourth centre has just opened, linking up parts of East Anglia, and the West Country and South Wales are to be included in a month or two.

At present agents with London, Birmingham, Sheffield, Manchester, Peterborough and St Helens phone numbers can use the service.

Order Line is based on the IBM 4300 range of hardware. Both the 4331 and 4341 are based centrally and linked to the 100 model 3881 terminals.

Puzzler

CHESS and its 8 x 8 grid has always been a fruitful source of ideas for the puzzle composer. On the assumption that virtually every reader of this column will be familiar with the 'moves' of the various pieces, I will henceforth from time to time include a problem, which involves just the geometric possibilities, with no specific requirement regarding actual playing ability on the solver's part.

Here is the first of these items: Place just the 16 White men on the board, in legal positions (no Pawns on the first or eighth ranks), so that none of them can move.

PEOPLE and EVENTS

Marconi names managing director

MANAGING director of Marconi Space and Defence Systems Arthur Walsh has been promoted to managing director of The Marconi Company. He is being replaced by Dr Ian MacBean, former assistant managing director of Space and Defence.

Walsh was in the Army for three years, before reading natural science at Selwyn College, Cambridge. In 1951 he joined the GEC laboratories at Stanmore in the Radar Microwave group. He became group leader in 1956 and was promoted to divisional leader in 1962. Two years later he became assistant manager of the Applied Electronics laboratories at Stanmore. In May 1970, Walsh was made managing director of Marconi Space and Defence Systems where he was responsible for several of the company's high technology projects including those relating to torpedoes, guided missiles and communication and scientific satellite programmes.

Logabax appoints president

JACQUES DUMAS, until now president of Sperry Univac France, has been appointed president and general manager of Logabax, France's leading computer peripherals firm, which was the subject of a £24 million rescue operation in December.

Logabax's general manager, M. Tal-



EACH year, Honeywell runs a scheme to encourage operational improvement suggestions. Accepted ideas are rewarded with a weekend holiday break or an evening out at the theatre, plus dinner for two. This year there were 81 entries, eight of which turned out to be usable suggestions. The winners are pictured above with Honeywell directors. From left to right: Bob Smith, Bob Wall, director, finance and administration; Dave Forrest, Margaret Wilkinson, Ken Burnell, Brian Long (managing director), Mike Mihailovic, Alan Beck, David Youens (personal director), Ken Thomson and Robin Lock.

CMG joint MD

TERRY JOINT has returned to the UK to take up the position of joint managing director of CMG (City of London).

He joined the company in 1969, and soon afterwards went to work in Holland. He was appointed associate director in 1972 and managing director at one of the company's Dutch subsidiaries in 1973. He moved to Frankfurt a year later to become managing director of what was then CMG's new German subsidiary.

Lamsac official dies

ONE of Lamsac's Local Authorities Management Services and Computer Committee long-serving officers, Peter Sanderson, has died at the age of 51.

He graduated from Hertford College, Oxford in 1961, and began his career in computing with Lamsac and NCR, working in customer training and systems engineering for clients in manufacturing companies. He also set up the training and education section of the London University Computing Service.

OEM director promoted

FORNER director of Logabax (OEM activities), Paul Bion has been promoted to managing director. He has been with the company for six years, having spent most of his career with NCR, Unisys and the Rank Organisation in a variety of sales and management positions.

Graham Kemp has been appointed to the new post of sales and marketing director at Marconi Computer Services. He joins the company from PRC, where he was European marketing manager. He has also worked for Unidam and Honeywell Bull.

Cyril Teed has left his post as marketing director of Logabax Communications Systems to join Plessey Defence Systems. He has been appointed to the new position of marketing director, at the company's headquarters in Dorset.

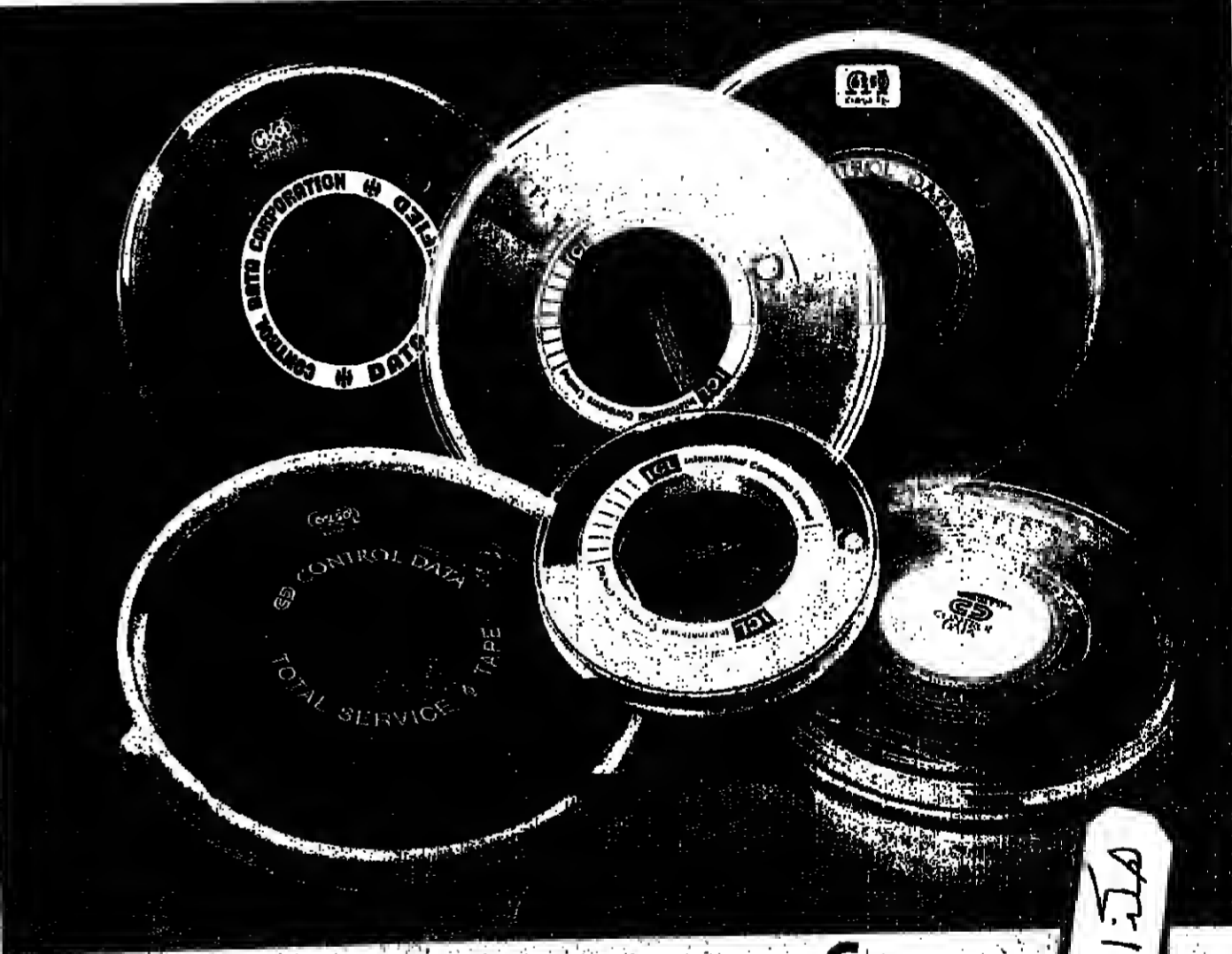


Bion Kemp
Ian Johnson is technical director at Alkovich Computer Company. He formerly worked with Lucas Alkovich on an automotive project.
Thomas Hardman has been appointed vice-president and controller at Informatics Inc. He was formerly assistant controller with the company.
Colin Croft has joined AB Dick as national sales manager, information systems.

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CONTROL DATASET

Control Data

At IBM, the passing of the year brought with it the changing of the guard, as Frank Cary stepped down as the company's chief executive officer. Taking his place is John R. Opel, IBM's president since 1974. Many observers and analysts of the world's biggest computer company believe that the 1980s will be a decisive decade for IBM. While Cary has set the stage for several crucial changes, it remains for Opel to ensure that these changes take place.

The changing of the guard at IBM....

SINCE Frank Cary took over as IBM's chairman of the board and chief executive officer in January 1973, the worldwide computer and communications scene has changed drastically. These were years of significant developments in the semiconductor business as well as years in which IBM faced, for the first time, tough competition from the likes of Anadiah, National Semiconductor and Sinage Technology.

Both Cary and his successor as chief executive, John Opel, worked their way up the IBM hierarchy through the company's Data Processing Division (DPD).

Timing

Cary has been with IBM since 1948, when he joined the company as a marketing representative in the Los Angeles DPD office.

He became a member of the board of directors in 1968, IBM president in 1971, and chairman of the board and chief executive officer in 1973. Last December, he turned 60 and relinquished his position as chief executive officer.

by
Peter
Krass

Cary will retain his chairmanship of the IBM board, with his seat as head of the IBM Corporate Office, which represents corporate management to all of IBM's operating divisions.

The timing of Cary's retirement is due to IBM's attitude of encouraging executives (even the chief executive officer) to retire at 60. It follows that Opel will hold the top spot for five years at most. He will turn 60 in January 1986.

Opel began his career with IBM in 1949 as a sales representative in Jefferson City, Missouri, and has been with the company ever since. In 1972 he was elected to the IBM board of directors. Two years later, in 1974, Opel became president of IBM, as well as a member of the Corporate Office. He was elected to his new position as chief executive officer last March. His new title went into effect on January 1, 1981.

Under Cary, IBM brought forward several new and different products and entered new markets and marketing techniques. General Systems Division (GSD) and Office Products Division (OPD) opened retail outlets during the late 1970s. And in the area of large mainframes and peripherals, IBM became a truly aggressive force, responding to the rise of its competitors, the compatible machine makers.

OPD, during the Cary years, introduced a series of electronic typewriters, the 30, 50 and 75, that bridged the gap between electronic typewriters and full-blown word processors. The machines, introduced in May 1978 (the 50 and 75) and in October 1979 (the 30), incorporated varying amounts of

memory and text-editing ability. In 1980 OPD introduced the Displaywriter, IBM's first software-driven word processing system.

Although some observers felt that the Displaywriter announcement was IBM's way of playing catch-up with the rest of the industry, at least in terms of technology, its competitors responded nervously to the announcement with price cuts on their other lines.

GSD introduced two key products during Cary's reign, both of which struck out in new directions — and both of which have been relative failures so far. One was a small database machine, the S/38, announced in October, 1978, and first shipped in June 1980. The other was a minicomputer, the Series/1, which IBM announced in November, 1976, and began shipping two weeks later.

Many computer industry observers believe that IBM's slow start with these products will not mean that its future in these areas is bleak. During the 1980s, IBM's S/38 and its mini business, they say, are both likely to become strong influences on the data processing industry. And GSD's small business systems, such as the S/32 and S/34, did very well, being closer to what IBM's customers were used to getting from the manufacturer.

IBM's biggest division, DPD, had a straightforward task under Cary: to beat its imitators. As Sanford J. Garrett, computer stock analyst for New York brokerage Paine Webber Mitchell Hutchins, puts it, "The further evolution of the microprocessor broke down the entry barriers. The result was unprecedented competition" — specifically from companies including Anadiah, Hitachi, Magnuson and National Semiconductor. Many of these companies were able to market superior machines at lower prices. And if they didn't, they couldn't compete at all.

Clobbered

In the mainframe business, IBM was its own most serious competitor until the last few years of the 1970s. Prior to that, used IBM computers in the hands of leasing companies and computer dealers were often better value than new machines from IBM. And they came with familiar IBM support.

In 1979, that ended. IBM announced the 4300, setting markedly lower price-performance ratios for small mainframes. Users and other vendors assumed that all forthcoming computers from the company would meet or exceed these machines' efficiency. This hasn't yet happened, but all of IBM's older model mainframes got clobbered on the used market. Realization that IBM's strategy at the high end differs from that at the low end came too late. The leasing vendors, both of which had a few good years, now live with IBM's rivals in the now-compatible computer game are now forced to catch up to IBM's pricing. The of customer loyalty. And office IBM history has shown that price cannot be recovered.

IBM was also able to hold the line in the disc market. Although three competitors, Storage Technology, Control Data and Memorex, were able to challenge IBM in this area, IBM's recently announced thin-film head disc has thrown them off a bit. The development costs associated with the new discs have proved to be large. The competitors are now struggling to match the new IBM products — and to do so in a timely fashion.

The race will be tough. Should the pace of the new disc installations greatly exceed that implied by IBM's initial delivery schedules, the competitors will be in trouble. If IBM falls behind its promised pace, the outcome favours the PCMA. And if IBM sticks to its plans, it appears that the competitors, at least the leaders, will survive.

Another crucial move was DPD's introduction of the 3081, presumably the first of the H-series. Some industry analysts, such as those at Advanced Computer Techniques in New York, add

3081 leaves some key questions unanswered

WHEN IBM announced the model 3081 central processing complex last December, the first reaction of industry observers was that many rumours would be laid to rest. These rumours centred on a widespread belief that IBM was going to produce a range of very powerful computers, the so-called H-series for the 1980s.

But now that the dust has settled on the 3081's unveiling, it seems that rumours are again circulating. The machine — at least the 3081 as initially announced — has left some key questions about IBM's strategy unanswered.

One of the more interesting commentators on IBM's strategy is Paul Raynault, vice-president of Computer Financial, a New Jersey leasing and a purveyor of computer residual value forecasts. In an interview Raynault said that IBM's numbering of the new machine may be a hint at the company's future plans for the unit.

Precedent

According to Raynault, the 3XXX designation is likely to make users feel that IBM's other large systems, the 303X series, will be around for a while. But the last two digits of the new computer's number, the "81", makes systems announced in January 1979. That could, in future, include models 4351, 4361, 4371 and 4381. The last model might, in fact, be the 3081 running in its native mode, according to Raynault.

He cites the transition machine at the high end of both 360 and 370 series, the model 195, as precedent for a computer getting a new number from IBM.

Along these lines, Wall Street expects IBM to make some kind of move in the mainframe field in the summer, perhaps in June.

The idea that the 3081 has a native mode of operation that would make it different — and faster — than the 370-IBM system, that was announced, is based on a similar design in the



Frank Cary (left) and his successor as IBM's chief executive officer, John Opel.

that IBM will unveil two additional lines during the 1980s, the Sierra and the Olympic series. These will be machines that may replace current IBM lines and that, in terms of processor speed and power, may go beyond today's range.

During the Cary years, DPD also discovered that frequent changes in mainframe purchase prices can keep the competition off-guard. For example, prices on the 3033 were cut three times during 1980. When IBM cuts prices, the others must follow suit. And because IBM has a lot more money to play with, it can better sustain any resulting deferment of profit.

Another important move was IBM's partnership, along with Aetna Life & Casualty and Comsat, in Satellite Business Systems (SBS), a high-speed data communications service company. SBS launched its first of three satellites in mid-November 1980.

Several of IBM's professional spectators, the bulls and bears of Wall Street and the self-

proclaimed industry gurus, believe that Cary's most significant accomplishment was to set the stage for IBM's entry into the Eighties, often at the expense of short-term growth for the company. For one, that meant clearing up at least some aspects of IBM's dispute with the US Justice Department and lawsuits from competing companies. These legal hassles had a detrimental effect on the company's work.

Harry Edelson, head of Wall Street firm Edelson Technology Associates, says, "Cary's best accomplishment was getting into new businesses, such as telecommunications, minicomputers and word processing. He made short term sacrifices in growth with hope for higher growth in the future."

Others, such as Robert Fertig, of Advanced Computer Techniques, says that although Cary cleared up a lot of IBM's legal problems, the company did experience "a lot of stumbles" during his reign. Specifically, Fertig points to the relative failure of the

8100, the S/38, the 4300 (which, he says, was underpriced) and the Series/1. And during the past five years, the company's growth rate has dropped below 15 per cent annually.

"The question is, can Opel get it back up?" Fertig asks.

Most observers concede that as IBM's new chief executive, Opel will have his hands full.

John Grey, president of Technetronic Inc., an Ontario-based consultancy, says, "You're going to see IBM regain its presence under Opel. The company will try to surround its four grey walls with excitement; it will become more speculative."

Grey points out that IBM's users are unhappy with the company's take-it-or-leave-it attitude.

"IBM has to become more reactive. The market is more sophisticated; IBM may have to specialise in order to sell to specialised markets. If it doesn't, it will lose business to hungrier, leaner, more responsive competitors."

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HAVE you ever tried to connect your mainframe to a mini? Have you ever wanted to pass computer-readable data to another company? If so, you will have first-hand

experience of the problems involved, and you must have wished for a standard interconnection method. Standards for Open Systems Interconnection (OSI) are being

prepared to help solve this sort of problem. It is described here by KIRK GEE, a senior consultant with the National Computing Centre's distributed computing div.

Solving the problem of system communication

THE purpose of OSI is for any one user (or his computer, program or terminal) to be able to communicate with any other. Ideally each sender should not need to know the technical characteristics of any recipient, except that he observes the conventions necessary to make him an "open system".

A system is open if it recognises and accepts the standardisation procedures for information exchange. An open computer system is not under any compulsion to receive everything that is sent to it - it is not like the postal service in this respect. The openness refers only to the potential of the system to communicate with others, to receive data and understand it.

This potential can only be exercised if both parties agree.

OSI will allow users to link together computers, terminals and other computing-related devices from different manufacturers so that they can co-operate to perform a single task. The task may be as simple as using a terminal to interrogate or update a file, or it may be as complex as ip-

terlinking processors at an oil refinery.

OSI will also allow a user to access, from a single device, systems belonging to a number of other organisations, provided of course that he has their permission. This has previously been feasible only where the organisations involved have agreed to use the same connection and access procedures.

Opportunities

But OSI will provide new opportunities. For example, imagine a group of separate companies, each running its own DP system. To exchange information stored in these systems it may be necessary to interconnect them. This can only be possible if standards for interconnection, OSI standards, are observed by all the participants.

Many other situations would be eased if standards for OSI could be agreed soon. If all computer systems presented to the outside world a standard image with common communications interfaces, it would be possible for any compu-

ter or terminal to be connected to any other and exchange meaningful information.

Meaningful information is a most important point deserving further examination. Being able to interconnect computing systems and exchange bit strings is not enough; the recipient must also be able to understand the messages being sent to him. Thus we also need conventions which all users of an open network must observe to ensure that the messages are exchanged in a standard manner, and can be interpreted and understood when received.

These conventions are called data communication protocols; by standardising them, open interworking will be made possible.

We usually divide the functions necessary for OSI into those which are communications-oriented and those which are processing-oriented, as shown in Figure 1. The boundary between the two types is known as the transport service interface.

Let us now look at what we need for OSI.

To start with, a user needs a

data communications network. This can be an existing system, such as the public telephone network or a private network, or it can be a purpose-built data transmission network.

We are currently witnessing the widespread development of national and international switched data networks which make possible the interconnection of different computers and terminals. The telecommunications authorities are responsible for these, and working through CCITT, their representative body, they have set standards concerned with their use.

Thus we have, or will soon get, standards for interconnection of computers, ie the communications-oriented functions and low-level protocols.

Model

Responsibility for standardising processing-oriented functions rests with ISO. These standards are concerned with the so-called high-level protocols which must be independent of the actual transmission mechanism being used.

To structure the standards work we also need a model which divides up the problem into manageable portions, so a layered approach has been adopted with clearly defined interfaces between adjacent layers and separable functions for each layer.

The ISO subcommittee on open systems interconnection has produced a seven-layer model.

The physical layer is concerned with the physical and electrical connections to the data communications network, which is the physical medium for interconnection.

The data link layer provides techniques to ensure that error-free data may be transmitted using error-prone physical circuits.

The network layer provides the switching and routing functions for the data to be exchanged between systems.

The next, the transport layer, isolates the processing functions

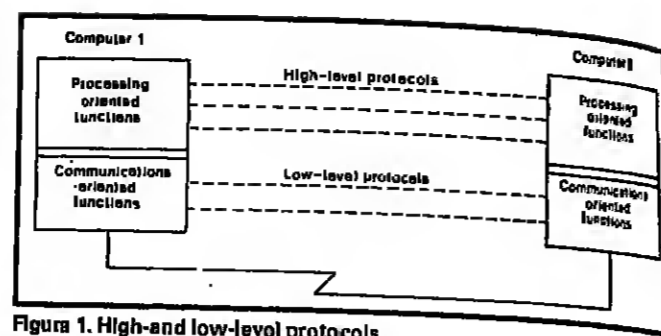


Figure 1. High- and low-level protocols.

from the characteristics of the data communications network actually being used. These four lower layers constitute the communications-oriented functions and are collectively known as the transport service.

The next layer is the session layer which handles the logical connections between co-operating processes or users in the two end systems.

The presentation layer is concerned with "presenting" the data to the highest layer in the correct form for the applications to understand it.

The application layer is concerned with functions which directly serve the ultimate users of the network.

The ISO reference model for open systems interconnection was produced to provide a common basis for the co-ordination of standards development in the subject area, and to allow existing standards to be placed in the overall architecture.

It is not intended to define the services and protocols in sufficient detail for it to serve as a specification for an implementation of the architecture.

It is meant to be flexible enough to accommodate changes in technology and in the applications for which it will be used, as well as allowing for a gradual change from existing systems to a full implementation of open systems interconnection standards.

In fact the reference model, in its final status, will be a framework which will define precisely and unambiguously the behaviour of an open system.

Problems

But the model will serve other purposes depending on the interests of those wishing to use it. Already some telecommunications authorities plan to use it for the telex or videotex services, while some computer manufacturers continue to develop their network architectures, in compliance with the reference model as far as the current definition of it allows. This reflects the fact that the model covers a wide range of topics to both computing and communications.

Problems obviously exist in adapting existing architectures to the reference model, especially in the upper layers. Indeed, the presentation services, for virtual terminals or remote job entry for instance, have been studied and implemented by some computer manufacturers in advance of work on open systems interconnection, so these may have to be adapted in order to fit into the model's framework.

The three lowest layers of the model relate closely to the physical properties of services offered by the telecommunications authorities (PTTs).

The lowest layer, the physical layer, specifies the physical properties at the interface with the transmission medium. The V24 interchange circuit definition used for an analogue point-to-point circuit is implemented in the physical layer.

Packet switching networks may require the use of the CCITT X25 recommendation. Its relationship to the OSI reference model is shown in Figure 2.

At the higher levels of the reference model, there are certain services which are common to most user systems and which can be sensibly standardised. These are:

- The virtual terminal service which eliminates most incompatibilities between applications and terminals using them.
- The virtual file service which overcomes the differences in file structures found in a distributed system made of dissimilar computers so that files can be transferred

accessed and manipulated from a remote location.

• The job transfer and migration service which allows jobs to be entered and manipulated on various host computers from remote locations.

Between the high-level and low-level services is the transport service which will isolate the processing-oriented functions from the characteristics of the data network and provide the facilities for a universal data transmission mechanism. This is currently receiving a good deal of publicity, with several rival proposals under consideration.

All organisations which use computers will be influenced by open systems interconnection standards. Computer manufacturers and software and peripheral suppliers will also be affected, possibly very significantly.

Those who stand to gain most from a standard open systems interconnection architecture are users. They will be free to choose their computers, terminals, discs and printers from all the suppliers who observe the standards, in the knowledge that they will be compatible.

They will be able to choose the computer which is most suitable for their particular task, rather than be constrained by the equipment available from their main supplier.

The availability of such a standard architecture is expected to assist the development of distributed systems - not necessarily open networks in the wide sense used in the reference model, but systems built more easily and at lower cost.

Distributed systems, if designed and managed properly, can bring benefits to their users as well as encouraging more applications and consequently higher sales.

But in spite of these prospects, suppliers of computing equipment and services today have a difficult decision to make if they plan to provide distributed systems. Either they can design an overall plan, together with sets of rules, to which all their related products conform - or they can wait for universally agreed techniques to become available.

Benefit

If they choose to provide their own design for a distributed system architecture it is unlikely to be compatible with all the others on the market, or with the one finally agreed as a standard. Besides, unless the manufacturer has very many committed customers he could lose orders from organisations which already use other makes of computer.

If they decide to wait for a universally agreed standard distributed system architecture, then in the interim they run the risk of losing those customers who want a proprietary system now.

However, a standard architecture or reference model will be of great benefit to all suppliers. They will have a "definite framework" which they can follow, and the knowledge that if most of them observe the standards they will not have to waste valuable effort in constructing special hardware or software for interfacing to equipment of another supplier.

This has been an introduction to the ideas behind the OSI work. The detailed definitions are contained almost entirely in working papers, written by experts for experts working in the area. To bridge the gap NCC has published a guide entitled An Introduction to Open Systems. This contains parts of which were used in writing this article.

PRODUCT NEWS INTERNATIONAL

CII-HB markets the Multics system

A UNIVERSAL multiprocessor system, Multics, is available from CII-Hoeywell Bull.

The hardware and operating system are designed to ensure high levels of security. The DPS 68M and DPS 870M computers used for Multics (Multiplexed Information and Computing Service) include from one to six central processors; and each system module can be duplicated to provide a dual system.

Main characteristics of the system's hardware are: One level virtual memory which is extended to files; all generated code is re-entrant; dynamic linking; eight levels of protection level which control the rights of each process in the system and guarantee data protection; control by hardware of access rights and multiprocessor hardware enabling each processor to execute any task (system or user).

The system is intended primarily to provide a range of services to end users in the fields of data processing and the communication of information. Software features

include a simple user environment encouraging communication between users, flexible control language which can be formed into programs, and software designed as a coherent system. The resulting standardisation enables information to be passed freely in all processes in all execution modes (all inter-language calls are permitted).

The systems will be delivered from the second quarter of 1981. The sale price of an entry-level Multics configuration, built around, for example, a DPS 68M processor of 4 megabytes, with 2,500 megabytes online storage, is about £430,000.

The DPS 870M is about 1.7 times more powerful than the DPS 68M. The sale price of a configuration built around a DPS 870M processor of 6 megabytes, with 3000 megabytes of online storage is about £780,000.

Monthly rental of Multics basic software costs about £33,000.

CII-Hoeywell Bull (CW), 94, Avenue Gambetta 75020, Paris.

Dumb terminal launch

A DUMB Terminal video display with visual attributes and limited editing is available from Lear Siegler Data Products.

Designated the ADM-5 Dumb Terminal, the VDU provides users with reverse video, reduced intensity, limited editing capability and a gated extension port for selected transmission to any serial RS 232C peripheral.

It has a full 12 inch anti-reflection screen with 1920 characters, upper and lower case, a numeric keypad, two switch selectable baud rates (75 to 19200), and a programme mode key designed for use as a programming aid to write into display memory.

The ADM-5 displays all the control codes in addition to the 96 ASCII character set.

Lear Siegler, Orchard House, Connaught Road, Brookwood, Surrey. Tel: (048 67) 80666.

Low-cost VDU range extended

BURNT Hill Electronics has extended its range of 19 inch rack-mounting visual display units with the Intelligent BH 913 and BH 921 terminals.

Main advantages claimed for the terminals, which feature one and two page memory respectively, are those of low cost, ease of maintenance and industry compatibility.

Features of both units include a 120 CRT displayable 24 lines of 80 upper or lower case characters on a 7 x 10 dot matrix with 12 x 10 resolution, dual intensity display being selectable.

Additional features of the two-page memory BH 921 include 80 storable tab positions and a prior-report for hard copy.

Associated remote keyboards are available for the terminals - the BH 914 for the BH 913 and the BH 922 for the BH 921, the BH 914 featuring 82 keys including a 14-key numeric keypad.

Burnt Hill Electronics (CW), Holder Road, Aldershot, Hants GU12 4RH.

Cable faults

A RANGE of diagnostic devices, available from Thames Electronics, are designed to identify faults in data communications environments.

The range includes a multiway cable tester, developed to test V24/RS232 cables in situ. By inserting the transmitter at one end and the D type connector, a sequential positive voltage is passed over each wire in the cable. This voltage is detected by the receiver and displayed on an LED array numbered 1-25. It will show crossed wires, dry joints or disconnected wires.

Prices start from about £150. Thames Electronics, 37 The Priory, Hursley Park, West Measey, Surrey. Tel: (01) 9413604.

Broad-band FET series

A SERIES of VMOS power FETs for broad-band applications in high frequency amplifiers is available from Semiconductor Specialists (UK).

Called the Silenex DV-2840, -2880 and -28120, they are designed for applications in HF, VHF and UHF amplifiers in class A, B or C operation, and are capable of delivering 40, 80 and 120 Watts respectively. Each delivers its rated output at 28 Volts and provides a minimum power gain of 10dB at 175 MHz.

Prices start at £25 in quantities of one to 29. Semiconductor Specialists (CW), Carrol House, 159 High Street, Yewstoke, West Drayton, Middlesex. Tel: (08954) 45522.

Oscilloscope

A TEN to 15 Mhz dual trace oscilloscope is available from Scopex Instruments. Called the 14D10, it replaces the company's 14D10B model. The instrument is controlled by a potentiometer and a pushbutton switch, which triggers positive and negative edges of digital pulse trains, without re-adjustment.

The timebase ranges from 100 microseconds/cm to 100 milliseconds/cm. Add and level facilities are provided.

It costs £230 + VAT. Scopex (CW), Pimmore Industrial Estate, Pimmore Avenue, Letchworth, SG6 1JJ. Tel: 04624 77771.

Approval given

APPROVAL for use over Post Office lines has been given to Intercom's Dex 1500 digital facsimile terminal, which is compatible with the CCITT Group III. Intercom Communications Systems Ltd (CW), 39 Montague Avenue, Slough, SL1 6BS. Tel: 0753 70821.



The Interactive graphics digitiser.

Graphics digitiser station

IGD (Interactive Graphics Digitiser), is a processor-driven digitiser station available from GTCO Europe.

This user-oriented work station includes digitiser, graphical display, keyboard, floppy-storage and complete terminal software.

It can be applied to textile design, medical research, survey analysis, urban planning, seismic data processing and mapping.

It has a high resolution large format input digitising board, test and graphics VDU, 128 character ASCII keyboard for commands and manual text entry, twin microprocessors with 96K-bytes of

high speed data storage and twin floppy disc drives affording a further 320K-bytes of mass data storage.

Its I/O ports enable a variety of other peripherals and communications media to be connected. The software caters for both data management and creative interactive operations.

While the interactive design routines are controlled by in-built computer, supervision of data storage is controlled by a second dedicated microprocessor.

GTCO Europe, (CW) 75, Woodor Avenue, Hillingdon, Middx. Tel: (0895) 39812.

Designed to cut down noise from printers

A SERIES of acoustic enclosures from Power Equipment is designed to reduce the noise of a wide range of popular data and word processing printers. Known as Silencers, the enclosures consist of two sections.

A heavy gauge steel tray fits beneath the printer. This is lined with dense vibration-resistant foam which absorbs vibration and noise. The main casing is sheet steel fabrication finished in Mist Grey enamel.

The entire top and front sections of the enclosures are one-piece transparent acrylic sheets which lift up on gas-filled struts for

access and provide visual observation of printer operation. A small fan is also fitted in the casing to circulate air and keep the printer cool. Full facilities are built into every Silencer to accommodate both rear and have paper feed inlets and outlets.

Up to 75% reduction is claimed for the series, which is suitable for use with about 60 different models of receive only printers including machines from Anadex, Datacube, Dabblo, Facit, Hewlett Packard, Mannesmann, Mael, Qume and Tally.

Power Equipment (CW), Kingsbury Road, London, NW9 8UD. Tel: 01-205 0033.

Rair enhances Decwriter

THE enhanced Decwriter IV 1.34-AA has been added to Rair's computer terminal catalogue. Improvements have been made in forms handling capabilities and the new model is a lightweight 30 chps teleprinter designed for the office environment. Its 9 x 7 matrix print head prints the full upper and lower case ASCII character set

on single sheet, roll or tractor feed paper. It communicates at 300 baud via either an RS232C or 20mA current loop interface.

Its feature is the ability to print variable character sizes. It costs £625. Rair (CW), 30-32 Neal Street, London WC2H 9PS. Tel: 01-836 4663.

Satellite communications and you...

in Practical Computing

The February issue, available from leading newspapers, examines the feasibility of exchanging data between home computers, using satellites. In principle a small rooftop dish can allow a home computer in the UK to communicate with other users in the USA and Europe. Just think what that could do to your telephone bills.

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If the applications area, we see how a firm of manufacturers is making use of a micro technology running in the background of its work.

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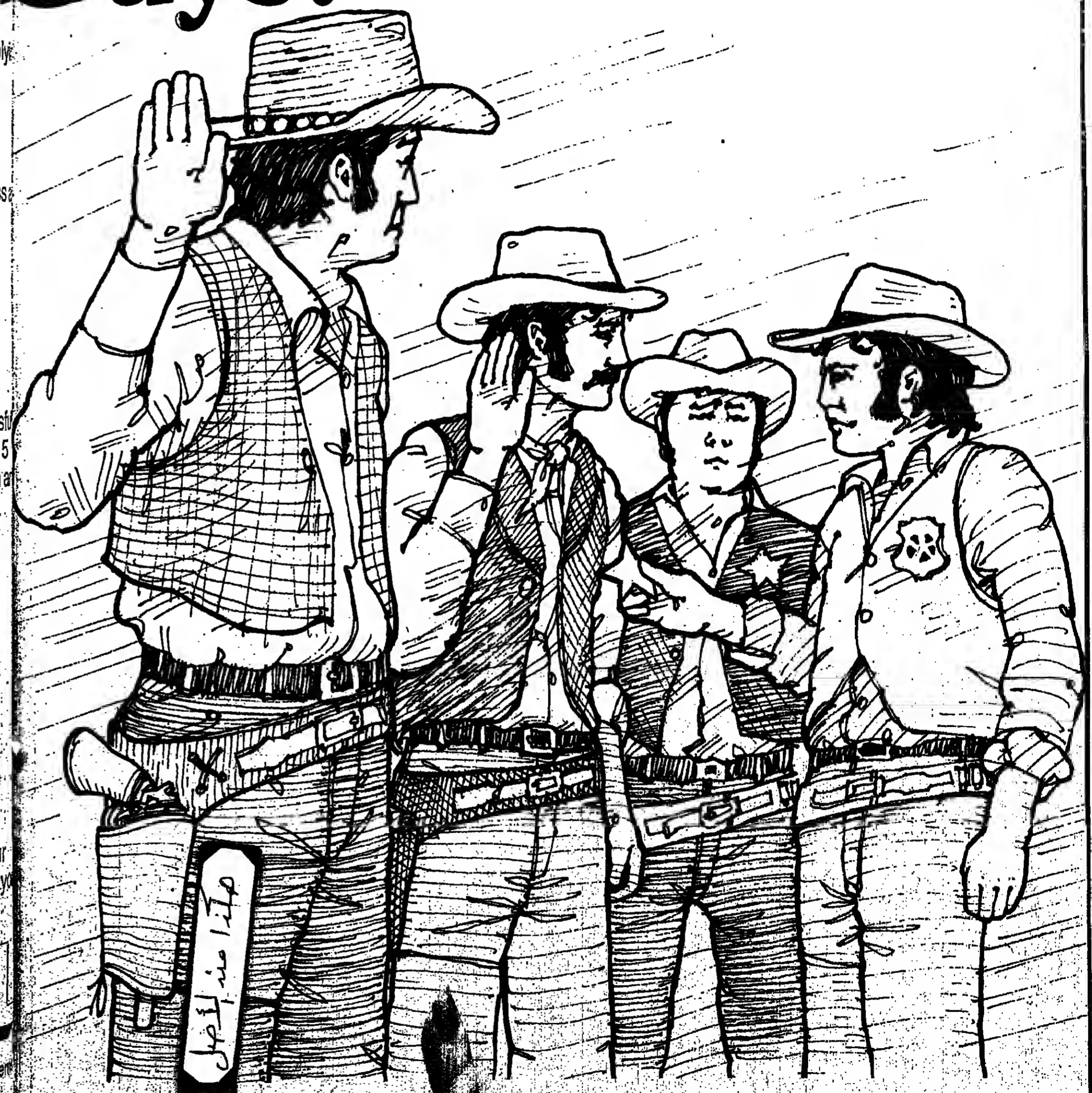
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A leading Systems House, based in Central London, is seeking to employ additional Programmers to join its young, innovative software development team. Candidates should have a degree in a numerate subject and at least two years' real-time programming experience in either FORTRAN, CORAL 66 or Assembler. Knowledge of particular hardware is

not important, but exposure to mini computers, in particular DEC's PDP range, HP2100, Prime 500 or Honeywell Level 6, would be advantageous. These positions will appeal to applicants who enjoy working as a member of a small team involved in the design, coding and testing of real-time software. Ref: L/5/C

Management Consultants

City and West End: Salary to £15K

Our clients have an enviable reputation as a Management Consultancy and Research Organisation. The Company is now seeking several additional Consultants and Senior Consultants. All candidates are expected to have good personal communication skills, be self-confident and highly presentable. Generally, preference

will be given to graduates aged 28-34 years with proven abilities to appreciate and identify business management and technical implementation problems. In particular, candidates with a knowledge of structured design techniques, data management, networking and VIEWDATA/PRES-TEL applications are encouraged to apply. Ref: L/5/D

Process Control Programmers

Sth. London & Surrey Salary to £10K

A leading supplier of Industrial and Process Control Hardware and Systems Software is seeking to recruit Applications Programmers and Support Analysts for its U.K. Headquarters. All respondents must offer at least one year's experience in either Assembler or FORTRAN as a primary language whilst those with exposure to PASCAL, BASIC or COBOL

will be favourably considered. You will play a significant role in all stages of software and systems development from product planning to installation and live running. Since travel both nationally and internationally will form a significant part of the job function, mobility is an essential criterion for these positions. Ref: L/5/E

Logistix, 10 Grenville Place London SW7 4RW

01-373 3063



Telex: 28800

Software Manager

Computer Aided Design, Test and Manufacture

Nottingham to £11,000 p.a.

The job is to establish and manage team producing design, manufacture and test software tools for application to the design of advanced custom VLSI integrated circuits.

The products. This position interfaces with development and manufacture of a wide range of telecommunication and automated office products being introduced by the company into the commercial market.

The person appointed will work within an environment of rapidly changing technology and it is likely that he/she will hold a good honours degree in electronic engineering and have had a number of years experience in the design and production of CAD software.

For further details or an application form please telephone Paul Newman, Personnel Manager on Nottingham (0602) 254831 extension 371 or write to him at Plessey Communications and Data Systems Limited, FREEPOST, Telford Road, Bolton, Nottingham NG9 1JA.

PLESSEY

Do you know where you are going?

The Systems Division of Wordplex Ltd. is embarking on the most advanced and exciting development project of this decade.

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We now require programmers with the following experience:
- in low level or systems Languages, i.e. ASSEMBLER, PLZ/SYS, CORAL, PASCAL, etc.

- on Mini, Micro or Mainframe Computers.

- with detailed knowledge in any of the following areas:

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We have vacancies at all levels for:

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ANALYST PROGRAMMERS
SUPPORT PROGRAMMERS
PROGRAMMER/LECTURER
TECHNICAL AUTHOR**

Call or write to:
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WORDPLEX LTD.
Systems Division
Constable House
St. Leonard's Road
Windsor, Berkshire
(07535) 57161

PROGRAMMERS/PROGRAMMER ANALYSTS

London, Harlow, Bucks., and Middlesex. To £11,500

We would like to hear from candidates with good experience of one or more of the following languages: COBOL, PL/I, FORTRAN, ALGOL, BASIC, PASCAL, C, and DOLBY. Also experience of the following hardware: IBM 360/370, 370/145, 370/155, 370/168, 370/198, 370/245, 370/260, 370/270, 370/280, 370/290, 370/300, 370/310, 370/320, 370/330, 370/340, 370/350, 370/360, 370/370, 370/380, 370/390, 370/400, 370/410, 370/420, 370/430, 370/440, 370/450, 370/460, 370/470, 370/480, 370/490, 370/500, 370/510, 370/520, 370/530, 370/540, 370/550, 370/560, 370/570, 370/580, 370/590, 370/600, 370/610, 370/620, 370/630, 370/640, 370/650, 370/660, 370/670, 370/680, 370/690, 370/700, 370/710, 370/720, 370/730, 370/740, 370/750, 370/760, 370/770, 370/780, 370/790, 370/800, 370/810, 370/820, 370/830, 370/840, 370/850, 370/860, 370/870, 370/880, 370/890, 370/900, 370/910, 370/920, 370/930, 370/940, 370/950, 370/960, 370/970, 370/980, 370/990, 370/1000, 370/1010, 370/1020, 370/1030, 370/1040, 370/1050, 370/1060, 370/1070, 370/1080, 370/1090, 370/1100, 370/1110, 370/1120, 370/1130, 370/1140, 370/1150, 370/1160, 370/1170, 370/1180, 370/1190, 370/1200, 370/1210, 370/1220, 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Applicants must have either a minimum of 5 years' relevant computing experience or at least 4 years' experience plus a degree, HND or equivalent qualification in computer science or other allied discipline with computing as a main subject. Candidates' experience must include a substantial period in systems design.

2. PROGRAMMER ANALYSTS: £5,790-£7,285
Applicants must have either a minimum of 3 years' relevant computing experience or at least 2 years' experience plus a degree, HND or equivalent qualification as above.

3. PROGRAMMERS: £4,900-£6,230
Applicants must have at least one year's practical programming experience of hold a degree, HND or equivalent qualification as above. Final year students who expect to obtain this type of qualification in summer 1981 may also apply.

Experience of ICL 1900/2900 series computer (including PLAN COBOL GEORGE Operating Systems and Direct Access) or mini computers or the application of dedicated processes in the medical and scientific fields would be an advantage.

Grading and starting salary will be related to qualifications and experience. Systems Analysts are paid an incentive bonus of £854 per annum (within scale maximum) after 2 years' satisfactory service. Programmer Analysts are paid an incentive bonus of £710 per annum (within scale maximum) after one year's satisfactory service.

The Civil Service Commissioners may decide to interview only those applicants who appear from the information available to be best qualified.

The appointments offer the following benefits:

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Informal enquiries may be made by telephone to Department of the Civil Service (telephone Belfast 780781, extension 2708) or Department of Health and Social Services (telephone Belfast 44377, extension 251).

Closing date: 18th February, 1981.
Job Ref. 9B 5/81/W, Tel. Ext. 255.

The posts are open to both men and women. Please write or telephone for an application form (using the extension number indicated and quoting the job reference) to the Civil Service Commission, Rosepark House, Upper Newtownards Road, Belfast BT3 9NR (telephone Dundonald 4585). Completed forms must be returned to arrive not later than the closing date stated.

**NORTHERN IRELAND
CIVIL SERVICE**

**COMPUTER WEEKLY
CLASSIFIED**
DIRECT LINE 01-661 0121

the newspaper computer people rely on

Chief Programmer

(Salary up to £12,500 plus substantial benefits)

required by Britain's leading property company.

Land Securities (Management) Limited, the leading property company, is in the process of developing a range of new computer systems. These will be based on a Honeywell Level 64, which has recently been installed, will utilise TDS and IDSII software and will incorporate a network of terminals both in the Head Office and Regional Offices.

A Chief Programmer is required to complete the team responsible for managing the development of these systems. Applications are invited from men or women who can demonstrate:-

- Experience of Cobol programming in an on-line environment.
- An ability to contribute to the programming methodology used by the installation.
- Experience of managing a team of at least ten programmers.

Experience of the use of Honeywell Level 64 or 66 computers and/or a Codasyl database management system is desirable but not essential.

A starting salary of up to £12,500 per annum is offered. Other benefits include a non-contributory pension scheme, an annual bonus, a share participation scheme and free BUPA and restaurant facilities.

Please send brief details of qualifications and experience to the following address. (Applicants to our recent advertisement for a range of computer staff need not re-apply).

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Landsec House, 21 New Fetter Lane, LONDON EC4P 4PY.

£17,460

ITALY

PROGRAMMER/
ANALYST

TASK Information retrieval services, TASKS in the area of File Load, Reload and Maintenance Accounting, Statistics and Special Utilities, Programming MODS, creation of new programmes and execution of large job sequences.

QUALIFICATIONS
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CONDITIONS
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ABLAIVE LTD.
9 Church Road, Long Ashton
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SPECIALISTS**

Paris

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Permanent positions with salary and excellent experience offered. Alternatively, temporary contract position may be offered.

Contact: Mike Bore or Ray Cleaver on 02013 81165 or mail to Hugh Pughman Associates Ltd., Newround Hill House, The Poles, Dorset BH15 1HS.

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If complete artwork is supplied, 11 a.m. on a Tuesday.

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Applicant Must be experienced commercial hardware sales. Direct manufacture experience preferred. Communications orientated/technical support background useful.

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First class mini equipment into first time commercial user market place. Realistic quote's, no top limit on earnings.

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Commercial/Technical systems batch and RJE

R38 Salesman London/North West
£7.5K BASE, £18K ON QUOTA + CAR
One of the most successful O. & M. Organisations world-wide. "Bread and butter" commercial systems on first class equipment plus shop floor and word processing availability. Good management, good support, no top limit on earning. MANY OF THEIR SALESMEN EARN OVER £20K.

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U-C-A NOW LOOK HERE!

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W. London To £11,000
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CONSULTANTS

C. London £9,000 to £18,000
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CONTRACT

PROGRAMMERS/ANALYSTS
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UNIVAC 1100 DMS 1100 TJP, EXP. 3 MTHS+
IBM 370 PL1 MVS CICS 3 MTHS+
IBM PL1 DB/VS1 3 MTHS+
ICL 2980 COBOL DME VME 3 MTHS+
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JBA

Systems Programmer

West Germany c. \$475 p.w.
Our Client, a consultancy with offices in Germany and Switzerland, wish to recruit an experienced MVS Systems Programmer to assist with the installation of a large IBM mainframe. Knowledge of IMS is also required and it is expected that this will be a 6-12 month assignment. Immediate start date.
Contact: Brian Postles

Consultants Aircraft Simulation

Paris \$20,000+ expenses
Our Client, an internationally recognised consultancy, requires a number of experienced technicians to work on the development of major Aircraft Simulation systems. Candidates should have a degree or equivalent with at least 3 years real-time software design experience and have the confidence that stems from initial familiarisation with the unique and often multi-million pound drives associated with this technology. Whilst normal you will enjoy good overseas allowances as well as the excellent basic salary.
Contact: Margaret Stevens

Systems Analysts

London/Bucks based up to £13,000
Our Client, a leading systems house, currently has vacancies for a number of Systems Analysts to assist with the analysis and definition of large real-time applications. Applicants should have a minimum of six years in the analysis and determination of user requirements and should have been involved in at least one significant project using on-line/communications techniques. Must be willing to travel to visit remote users.
Contact: Jim Baker

Market Research Consultant

West London/Europe to £12,000+ Car+Benefits
We have been retained by a leading market research organisation to recruit a Senior Consultant who will be responsible for investigating and reporting on the marketing trends of the data processing industry in Western Europe. Candidates must have a minimum of 5 years experience in data processing and should be familiar with IBM products. This challenging position involves travel both throughout the U.K. and overseas.
Contact: Isabel Bruce

Systems Designers

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An internationally recognised systems house need two experienced people to work on the development of a major on-line system. In the early stages a great deal of time will be spent abroad with generous overseas allowances. Five or more years must have been spent in the design and implementation of large on-line commercial systems also extensive knowledge of IBM mainframes. Experience must encompass at least one of the following languages: PL/I COBOL or Assembler and IMS in a multi-IBM environment.
Contact: Janet Chivers

Analyst/Programmer

City Neg. to £11,000
An International Bank based in the City have a current need for an experienced Analyst/Programmer to join their existing team specialising in software and hardware support, implementation and development for local and overseas offices. Applicants will have at least 4 years experience in RPG II, preferably being gained in an IBM environment. The successful candidate will additionally be involved in the analysis and interfacing of various automated office projects into a common network. Usual banking benefits apply.
Contact: David Hendry

Banking Analyst

City c. £10,500+Benefits
The London branch of this prestigious European bank is about to embark on a major programme of new applications development and is seeking an experienced Systems Analyst to play a key role in this project. Experience must consist of at least 18 months Systems Analyst in a Banking environment coupled with a knowledge of foreign exchange and/or money market applications. Long term career prospects are excellent and a good salary is supplemented by attractive fringe benefits.
Contact: Janet Chivers

Senior Programmer

City \$9,000+
Ideal opportunity to join a well established financial organisation who are in the process of installing two DEC 11/70's. To apply, it is essential to have at least two years experience in a DEC environment using BASIC/BASIC-2. Also to have good knowledge of financial applications, plus the ability to deal with users and their problems. Promotion prospects are good as this is a new and developing installation.
Contact: Janet Chivers

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(PK1511)

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7 years' experience of IBM environment - Ability to promote and maintain the highest standards of program development - Familiar with latest IBM methodology - COBOL installations - Information Retrieval - Distributive Processing.

(PK1512)

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WEND

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A minimum of 2 years' Commercial experience, including 1 year COBOL, pref. on IBM or HP to develop business related computer systems. CICS, ICCP, IMAGE, VIEW or QUERY as asset.

(PK1514)

ANALYST/ PROGRAMMER

BERKS

TO £12K

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(PK1498)

ANALYST

CITY

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C LONDON

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MIDD.

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(JA1451)

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The Applicant should ideally have a mini-computer background (preferably IBM) and knowledge of RPGII. He is likely to be single with the drive and initiative that the job demands, modified by diplomacy.

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An Operations Controller is required to take responsibility for the data control, data preparation, computer operations and technical support functions, currently employing 9 people.

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The company is friendly and professional, and benefits offered include 50p Luncheon Vouchers, good pension scheme and six monthly salary reviews.

For further information please write to, or telephone Pat Barnes quoting ref: CW104-1P.

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Computer and Professional
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SYSTEMS ANALYST

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You will join a small but busy team developing integrated databases in a real-time environment on a Burroughs mainframe where you can expect to achieve a high level of job satisfaction and career advancement.

We expect you to have a COBOL programming background and at least two years' systems analysis experience which should include seeing a system through from start to implementation. Experience on Burroughs equipment would be an advantage but is by no means essential.

For further information on this exceptionally interesting position, please contact MARK IRENS, ADVISING DIRECTOR, quoting reference CWO502/1.

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The equipment is excellent and therefore very marketable and all the Company's Sales Executives exceeded their quotas last year resulting in a turnover of £12 million.

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PROJECT LEADER

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If you have previous pre-post sales support experience, self motivated, can convey ideas, solve problems and have knowledge of comms and distributed processing then our client would like to meet you. Phone today - quote (PK1462)

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Analyst/Programmer with 3 years' experience on IBM OS Systems required for management Information systems work utilising Report Program Generators and personal computing facilities. APL knowledge an asset. (JA1506)

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WE NEED ANALYSTS!

Yes we need real Systems Analysts. People who excel at extracting information from a multitude of users, people who can gain the full confidence of user departments, including senior and operational staff, helping them find out what they want and helping them to decide what they really need. A military system background would help but is not a pre-requisite.

£10,500-£13,500

Plus benefits package which includes: Bupa, free season ticket loan, relocation expenses, pensions, etc.

Systems Concepts

Imagine the scope and freedom an Analyst really needs to do his or her job properly. The freedom to encourage users to give information without the restriction of a pre-conceived sizing of the machine or installation or system, the freedom to produce a totally comprehensive requirements specification, the scope that comes naturally from being there to analyse rather than impose a solution, the additional freedom that results from having a first-class team of software and communications designers to back you up. How often have you worked in conditions as ideal as these?

The task our client has set is as comprehensive as these parameters indicate. The decisions to be made from your work will identify not only the detailed aspects of the system design but also the benefits to be derived from a computerised solution, the costs such a project would incur and the time-scale for implementation.

What is certain is that the system will be multi-user and multi-locational and that the most up-to-date technology will have to be used. The overall objective is an extremely exciting one to achieve!

Professional Background

Your experience to date must indicate sound, thorough Analysis - not just design and programming. Most people at this level will have taken responsibility for a substantial system development and we will expect to see some evidence of flair, imagination and self-reliance. A degree or equivalent professional qualification would be a considerable asset, whilst knowledge of such techniques as data analysis, extremely welcome.

In view of the growth factor and the way in which our clients assign staff to project work, there is no doubt that there will be progressively more room for extremely senior consultancy and project management positions as time passes. Additionally, our client's approach to project control and system design is, entirely modern and exposure to these methodologies is certain to enhance and increase individual professional capabilities.

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Interested? Your career may need the kind of boost that working on this system will give. The company you would be working for is recognised world-wide as one of the very best, as well as being one of the largest in the computer industry. Your security and professionalism cannot help but be enhanced.

Contact: Andy Wright or Mike Creamer

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Experience in FORTRAN, ASSEMBLER, PDP11, RSX11 would be relevant. Enthusiasm to work effectively in demanding projects and an ability to work to exacting time scales is valued as highly as academic qualifications.

Salaries are competitive, with BUPA and other social benefits. Relocation assistance is available as appropriate.

Please write to or telephone for an application form to:

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St. Peter's Road
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Required for Computer Company based in Hampshire. Experience of BASIC is important and evidence of programming ability required.

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Applicants, aged 22-35 years, should contact: Mrs. Linda Fuller, BP Research Centre, Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7LN. Tel: Sunbury 81234 ext. 634.

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Malaysian Head of Computing Standards and Techniques

Sarawak Shell Berhad and Sabah Shell Petroleum Company Limited now have an opening for a Malaysian to be Head of Standards and Techniques, based in the Information and Computer Services Department at Lutong, Malaysia. Leading a small team, you will be responsible for all systems software standards and techniques, and must be self-motivated and capable of working in the challenging and growing environment of this major oil company. You should have a degree or equivalent in computer science or a science subject, and at least 4 to 5 years' systems programming/standards and techniques experience with IBM equipment using DOS/VS or DOS/VSE plus a thorough knowledge of IBM assembler language. The Department operates an IBM

4341, and preference will be given to those with DLI and CICS experience. At the end of this year VM with CMS/APL will be introduced. For this senior appointment, the initial salary will reflect your qualifications and experience, and could be up to M.R. 54,000 per annum. We offer free medical treatment for you and your immediate family, plus attractive bonus and pension schemes. A housing allowance is provided and reasonable relocation expenses considered. If you are interested in this position, please write giving personal, educational and employment details, and marking the envelope "Confidential - Head of Computing Standards and Techniques". Closing date for applications is 27 February, 1981, and candidates in Malaysia should write directly to Lutong.

Mrs P. W. Frise, PNEJ41 (C6),
Recruitment Division,
Shell International
Petroleum Company Limited,
Shell Centre, London SE1 7NA.



The Personnel
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SYSTEMS ANALYSTS

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For a strictly confidential discussion on these opportunities, telephone Barry Latchford on the number below, or on Newick (STD 082572) 3197 after 7.00pm. Alternatively, write quoting ref. CW167 enclosing a brief career history. Initial interviews will be conducted in London.

Barry Latchford Associates Tel. (0444)
Blair House, Haywards Heath, Sussex RH16 3PH 59815/6/7

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At least three years experience in international banking systems development using high level languages and DEC hardware.

Business Analyst/Implementation Specialists

Successful applicants will probably have at least five years experience in international banking including foreign exchange and money market operations and will have had one year's experience in project management.

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Please send detailed resume in confidence to:
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ARBAT (UK) LIMITED
160 Queen Victoria Street
London EC4A 3DA

Interviews will be held in London between 10th and 27th February.

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Applications are invited for the above post which is available for one year. The main duties of the post are to support and develop software for a DEC 4080 computer which is to be used as a campus packet switching exchange. Knowledge of DEC computers and communications protocols, especially X25 would be an advantage.

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Six copies of applications and three copies of curriculum vitae (one from overseas candidates), naming three referees, should be sent by 20 February, 1981 to the Registrar, University of York, Heslington, York YO1 5DD, from whom further particulars may be obtained. Please quote reference number 15/805/1.

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Applications are invited for a post of LECTURER in the above Department. Preference will be given to candidates with special interests in theoretical computer science, or digital technology. Candidates should have a first degree or equivalent qualification in the field for Lecturers (£5,000-£11,700) under review, according to age, qualifications and experience. Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 15/805/2. Closing date for applications: 27th February, 1981.

BOX Nos.

All further replies should be addressed to:
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143721

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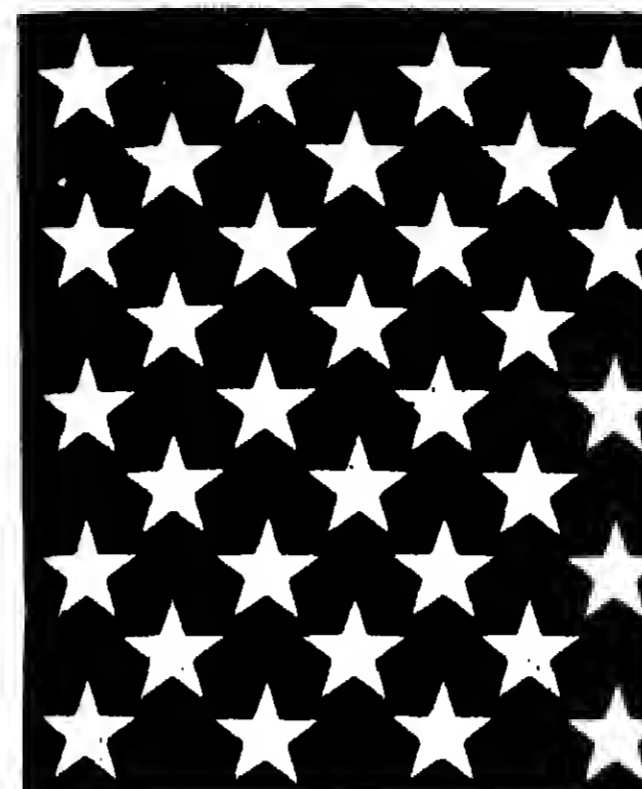
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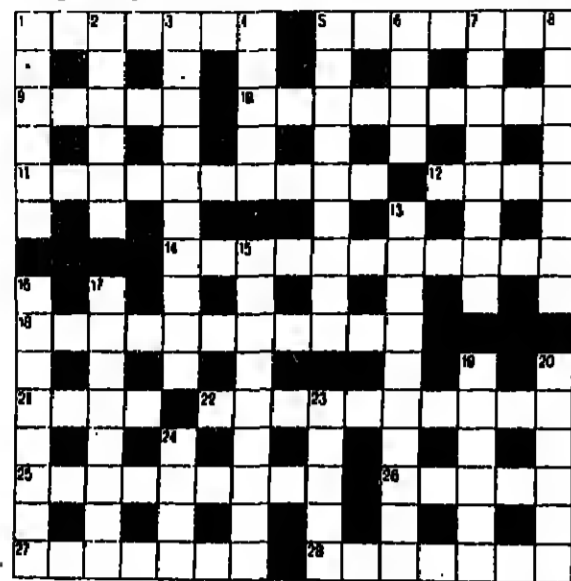
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CW Prize Crossword 13

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post Friday, February 13. Please use a ballpoint pen to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name..... (Miss, Mrs, Ms, Mr)

Address.....

Telephone.....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed..... Date.....

ACROSS

1. Mother gets soldier almost quiet, causing wonder (7)
5. Take clothes off washer-woman, parting with a note (7)
9. Object that's not quite modest (5)
10. Once tried out, it's abuse (9)
11. Achievement, we hear, of former great boxer reveals basic weakness (4,4,4)
12. Bird you've to capture in net? That's about right (4)
14. A disgrace, writing it backwards - it affects the eye (11)
18. Swift writing by top journalist with only a skeleton (5,6)
21. Love's tender back (4)
22. Prepared for action there's a race here before (3,5)
25. A sing type of car used by advocates generally (6)
26. Catch a girl with a ring (5)
27. Refresh the others with mineral (7)
28. Ice does melt - see? (7)

DOWN

1. To alter slightly let you up-to-date, if taking years (6)
2. Covered with sticky stuff the dope upset over me, an old copper (6)
3. Blimey, the doctor, king and workers are gluttons (10)
4. Only Richard will include this song (5)
5. Without reform, world authority about to get suspended (9)
6. Girl's turned up for feast (4)
7. Large-scale disease makes one heroic - me, I'd collapse inside (8)
8. They're prominent in skeletons' fronts, and - in backs (8)
13. Refuse entry to the German, sick with love for a bull-fighter (10)
15. Region having power that's easily managed (9)
16. One who fixes tax makes fools' endlessly irritable (8)
17. Glasses are no comfort, initially, among underground workers (8)
19. Member of eastern race having standard look (6)
20. Try, for a change, a certain Irish county (6)
23. Hello - a Communist taken on the staff? (5)
24. A game explores (4)

RULES AND CONDITIONS

1. Each competition may submit no more than one entry.
2. The puzzle will be open to all holders of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printer employed by them or the near relatives of any staff.
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Senior Assistant
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£14,288-£15,177 (from 1st April, 1981)

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Programmer

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BOX NUMBERS

Box number replies should be addressed to:

Box Number.....

Computer Weekly
Dorset House
Hamford Street
London SE1 8LU

THE SALES BIT

Hard or soft,
selling is an
emotive issue

LAST week, I presented buyer react positively at the stage, it may well be his prime motivation is the desire to feed his inherent megalomania.

However, further questioning may reveal that his principal requirement is to reduce escalating telephone costs, or even to catch whoever it is keeps 'planning his audit in Brisbane every other lunch-break'.

One thing is certain. It won't be because the machine looks sexy or due to its ready-to-memory having on access time two nanoseconds faster than the competition.

Identifying these individual motivations demands a variety of skills and personal attributes, particularly an effective questioning technique, sensitivity, perception and the ability to listen, as opposed to hear. Frequently truth can be perceived in little more than innuendo.

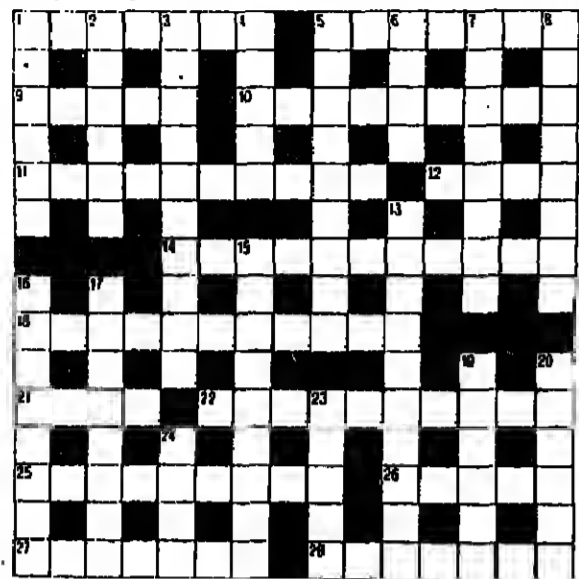
People cannot be arbitrarily categorised in terms of what is likely to turn them on or off and to assume is generally to be mistaken. It is essential, therefore, that salespeople develop the skill to identify these emotional factors quickly, for without this level of understanding it is impossible to present the reasons for purchase that the buyer wishes to hear.

There is no point in putting forward economy as the main reason for buying a particular car if the potential client is looking for a symbol of his senior status.

CW Prize Crossword 13

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry received. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post Friday, February 13. Please use a telephone number at which you can be reached during the daytime.



Name..... (Miss, Mrs, Ms, Mr)

Address.....

Telephone.....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed..... Date.....

ACROSS DOWN

1. Mother gets snicker almost quiet, causing wonder (7)
2. Take clothes off washer-woman, parting with a note (7)
3. Object that's not quite modest (5)
4. Once tried out, it's abuse (9)
5. Achievement, we hear, of former great boxer reveals basic weakness (4,2,4)
6. Bird you've to capture in retreat? That's about right (4)
7. A disgrace, writing it backwards - it affects the eye (11)
8. Swift writing by top journalist with only a skeleton left? (5,6)
9. Love's tender back (4)
10. Prepared for action - there's a race here before day breaks (2,3,5)
11. A snip type of car used by advocates generally (6)
12. Catch a girl with a ring (5)
13. Refresh the others with mineral (7)
14. Ice does melt - see? (7)
15. To alter slightly will get you up-to-date, if taking years (6)
16. Covered with sticky stuff the dog upset over me, an old copper (6)
17. Blaney, the doctor, king and workers are gluttons (10)
18. Only Richard will include this song (5)
19. Without reform, world authority about to get suspended (9)
20. Girl's turned up for fear (6)
21. Large-scale disease makes one heroic - me, I'd collapse inside (8)
22. They're prominent in skeletons' frosts and - er - lg backs (8)
23. Refuse entry to the German; sick with love for a bull-fighter (10)
24. Region having power that's easily managed (9)
25. One who fixes max makes fools' codicils irritable (8)
26. Glasses are no comfort, initially, smoggy underground workers (8)
27. Member of eastern race having standard look (6)
28. Try, for a change, a certain Irish county (6)
29. Hello - a Communist taken on the staff? (5)
30. A game explores (4)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of the publisher.
3. The puzzle must be completed by the solver or by a friend or relative of the solver.
4. The solution of each puzzle will normally be published in the magazine.
5. The decision of the editor on the interpretation of the rules and conditions on all matters shall be final. No correspondence will be entered into.

COMPUTER FIELD ENGINEERS

Wanted: Maintenance and repair engineers in Southern and London with top technical skills. Candidates must be over 20 years old and have at least 3 years' experience in the field of computer maintenance. Salary: £8,000 p.a. plus O.T. and 31% tax. There are many vacancies in the South East, London, North, Midlands, Wales, and Scotland. For details and application form, contact: Mr. J. H. Jones, Personnel Department, 10, Market Street, London E1 1JL. Tel: 01-522 5555. Fax: 01-522 5556.

Computer Supervisor

THE COMPANY

Aberdeen Service Company (North Sea) Limited is one of the major general services companies involved in the North Sea Oil Industry. Its operations encompass the purpose-built South Bay Marine Base at Peterhead; Engineering facilities at Peterhead; the provision of specialist personnel for Offshore Platform Maintenance; Transport; Property; and the supply of Bonded Goods to the Offshore Industry.

THE JOB

The Computer Supervisor will be responsible for controlling the day-to-day operations and supervising the computer staff. Other duties will include scheduling work, liaison with user departments, identifying/reporting hardware/software faults, and providing holiday and sick leave cover.

APPLICANTS

Applicants should have a good general education with at least two years' relevant commercial computing experience.

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Salary and benefits will be commensurate with qualifications and experience. There is a contributory pension scheme and free life insurance. Applications should be made in writing to:-

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Teleprocessing: We have approaching 1,000 terminals using ACF/VTAM, CICS/VS and ACF/HCI. Distributed processing systems are being implemented using B100 and 3480 equipment.

MVS: We have a challenging opportunity for an experienced MVS/JES 2 Systems Programmer who wishes to broaden his/her experience with a wide range of products - such as TSO, RQSCDE, VM/CMS etc, which control our IBM 3032 and AMDHL V78.

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Job Benefits include: good working conditions; generous holiday pay; sick pay; pension and insurance schemes; sports and social facilities; relocation assistance provided in appropriate cases. For further details please ring John Holmes, Technical Support Manager on 01-688 4466 Ext. 6005 or, after 5 p.m., Sharpphone 03421 810054, or write, quoting ref. C&W/1/CV to: Personnel Manager, South Eastern Gas, Segas House, Katharine Street, Croydon, Surrey CR9 1JU.

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A challenging opportunity has arisen within a leading American engineering company based west of London. The principal functions of the position are to initiate and direct activities pertinent to the development, maintenance and support of technical and scientific computer systems used throughout the company in technical analysis and design; to maintain and, where possible, enhance the company's competitive position with regard to engineering technology. Candidates must possess a BSc in engineering or science with 8-12 years' total experience or 4-6 years as an Engineering Analyst. Excellent relocation is offered where appropriate.

TECHNICAL SUPPORT ANALYST £8,500

This position has been created by the above mentioned engineering company to support the provision of interactive computer services and mini-computer based applications to a high level of reliability. Applicants must possess a minimum of 3 years' OF experience including an understanding of interactive systems. In addition, candidates must be prepared to keep abreast of software/hardware in current use and to provide user training and maintenance of standard user guides. A working knowledge of APL would be a distinct advantage. Excellent relocation is offered where appropriate.

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County Treasurer
and
Head of
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Programmer

£8,538-£9,471 p.a. incl.

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The Council's computer configuration comprises an ICL 2804 installation with 94K, EDS60's, train printer, 1501 COE data entry and on-line enquiry from 4 video terminals. The installation has recently been enhanced with on-line facilities (MINIMAC) and an extensive Cash Receipting network.

TEMPORARY HOUSING will be available in approved cases along with generous removal and disturbance allowances together with legal fees on house purchase up to £1,500.

Please contact the Chief Personnel Officer, Council Offices, Woking, Surrey (Tel: 04362 8931 Ext. 17) for application form and job description. Closing date: 17th February 1981.

Woking
BOROUGH COUNCIL

BOX NUMBERS

Box number replies should be addressed to:

c/o Computer Weekly
Dorset House
Standard Street
London E1 1JU

THE SALES BIT

Hard or soft,
selling is an
emotive issue

LAST week, I presented some thoughts on why people buy and the difference between the product they buy and the need or desire they are consciously or subconsciously wishing to satisfy.

This week, I would like to present a different aspect of the same situation; that is, "People do not necessarily buy the same product for the same reasons".

One thing is certain. It won't be because the machine looks easy or due to its readability - only memory having an access time two nanoseconds faster than the competition.

Identifying these individual motivations demands a variety of skills and personal attributes, particularly an effective questioning technique, sensitivity, perception and the ability to listen, as opposed to hear. Frequently truth can be perceived in little more than innuendo.

Motivations

You may think all this sounds obvious. We all know one buys an umbrella to keep off the rain, rather than for the thrill of owning a fabric-covered, collapsible metal frame with a handle. This simple truth, no more profound than common sense, is often overlooked in selling practice.

Here are some of the motivational forces that reside within the selling arena: succorance, anxiety, security, prestige, comfort, affection, sex, health, curiosity, politics, taste, inertia, pride, aversion, megalomania, malice, credibility, acceptance, impulse, popularity, self-expression.

There are others, of course. All the salesman has to do is identify those which are most likely to influence the final decision.

Megalomania?

For instance, the salesman may describe the telephone monitoring system he is selling as capable of giving complete management control of individual telephone usage by providing details of all incoming and outgoing calls for every extension in the building.

TRADER

CONFERENCES

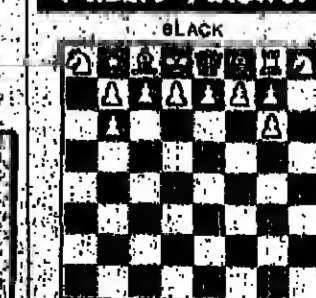
Electronic mail takes off

ELECTRONIC mail is about to take off in Europe. Results of studies made by the PT's (Germany's KTK, Sweden's Office 85, France's Non-Mine CCITT, and CBIT Study Group) are now emerging through a series of announcements which indicated the imminent launch of electronic mail on a large scale. The third annual Symposium on Electronic Mail and Messaging goes into the subject in detail and provides a technology update. Organised by the Yankee Group, it will be held from March 23-24 at the Cumberland Hotel, London. Further information from Alan Smith, Yankee Group, Reed House, Lower Richmond Road, Chislehurst, Kent, Tel: 01-892 7874.

THE International Computing Symposium this year reports on the state of the art of systems architecture. The symposium is to foster the exchange of ideas between scientists, computer professionals, engineers and managers on problems, new techniques and trends in systems architecture. Among the 76 speakers and authors to address the conference will be Computer Weekly columnist Tom Glibb. The conference is sponsored by Computer Communications and Microprocessors journals. It will be held from March 30-April 2 at the Institute of Education, University of London. Fee is £120 + VAT for ACM members and £140 + VAT for non-members. Details from IPC Conferences, Surrey House, Throby Way, Sutton, Surrey. Tel: 01-643 8040.

SELLERS of computer systems, peripheral processing systems, peripherals, packaged software, and media and supplies are expected to come together at Comdex 81, to be held in the Convention Centre in Nevada, Las Vegas. Exhibitors last year included Apple Computer Inc., Control Data, Honeywell Information Systems and Zilog. The exhibition, to be held from November 19-22, will feature scheduled press conferences and the option of direct mail follow-up after the show. For further information contact the organiser: The Interface Group, 160 Speen Street, Framingham, Massachusetts 01701, USA.

Puzzle Answer



THE middle four pieces on the eighth rank are interchangeable.

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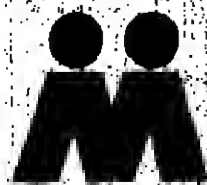
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Interested persons should apply in writing, with curriculum vitae, to Mr. L. Luyten, GTE ATEA N.V., Industriepark Klein Gent, 2410 Herentals, Belgium, who will treat all applications as strictly confidential.

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Mrs. S. Palmer on 01-481 3904

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Department of Computing Science

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Applicants should preferably possess a good honours degree in Computing Science with research degree as well. Applications will also be considered from persons whose first degree was in another subject but whose research degree had a substantial computing element and who wish to enter the Computing Science field.

Salary will be within the range £5605-£8085 of the Lecturers' scale of £5505-£11575, with placement according to age, qualifications and experience. Further particulars may be obtained from the Secretary of the University of Glasgow, Glasgow, G12 8QQ, with whom applications (8 copies), giving the names and addresses of three referees, should be lodged on or before February 27, 1981.

In reply please quote Ref. No. 4788.

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77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 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